



# Navy Medical newsletter



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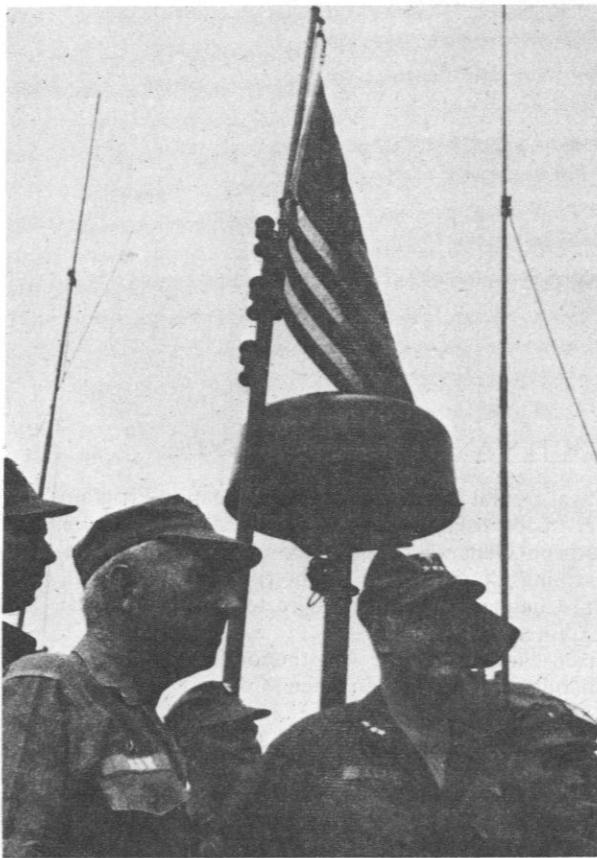
Credits: All pictures are Official U.S. Navy Photographs unless otherwise indicated.

Front Cover Photograph reveals crewmen on the flight deck of the hospital ship USS Sanctuary (AH-17), preparing to transfer a patient from a helicopter to the hospital's receiving room. Photo by PH3 Dennis McCloskey.

Page 2. We are indebted to CAPT F. Waring Burke, MC, USN, Headquarters, Commander and Chief, U.S. Pacific Fleet, for a fine photograph which he took during a past visit by the Surgeon General to the U.S. Naval Riverine Patrol Force.

Page 6. Photo by PH3 Dennis McCloskey.

Page 17. Photos taken during Exercise Exotic Dancer III by the Naval Hospital Boston Surgical Team were provided through the courtesy of CAPT F. L. Mayberry, MSC, USN, Administrative Officer, Naval Hospital, Boston. Assistance of CAPT W. M. Dreitlein, MSC, USN and CAPT P. G. Bamberg, MC, USN, CINCLANTFLT, in locating photographic support, is gratefully acknowledged.



## from the Chief

Several years ago, a very distinguished Spanish American War Veteran, great American poet and writer, Carl Sandberg, wrote a story called "Remembrance Rock". In this story a loveable old character named Judge Windom placed a rock in his yard and about the rock he gathered bits of dust. Some came from Valley Forge, Gettysburg, Bunker Hill and France (where he had lost his only son in the war to end all wars). From time to time he would visit this rock and meditate about the significance of these bits of dust. Were he alive today he would have to update his bits of dust, adding such names as Anzio Beach, Iwo Jima, Guadalcanal, Inchon and lately DaNang, and Cam Ranh Bay. I would propose that we all place ourselves in the position of Judge Windom and meditate a bit about Americanism and our own individual responsibilities toward our country.

This country was founded, protected and governed by men of strong, reliable character. Patriotism, a knowledge of our heritage and the blessings of free enterprise cannot be inherited, passed down as an heirloom, canned and placed on a shelf for later usage, labelled "open in an emergency". We cannot continue indefinitely to clip the coupons of the patriotic investments made by our ancestors. Truth is not necessarily self-evident. People must speak out. They must speak out and work for those principles upon which our labors and hopes rest.

Despite our tremendous technological advances in science and industry, in medicine and in space, the essentials of greatness in our people remain "character and faith". Penicillin is no adequate substitute for faith. In order to develop and maintain character it is necessary to have faith in something strong and idealistic. The value of America lies not in its material wealth but in its people and their capacity to build within, their ability to openly analyze themselves and make corrections, their ability to strengthen their faith in the country. One of the greatest threats to character in our people is selfishness, judging issues on the basis of personal gain. "What's in it for me?" is the portent of doom. Character comes from faith, willingness to work, self-respect and a desire to be of service to your country and fellowman.

A higher regard for the type of freedom and liberty that we have developed in this land is needed. America is still the greatest experiment in political freedom. It is still the laboratory of political science which has set men freer than any other form of government. It is still one of the few strong governments where unity, justice and liberty are meaningful terms to the individual citizen. We have an abundance for which to be grateful. Our's is a rich Nation — and free.

Freedom in function has a dynamic viable quality. It implies discipline, a regard for law and order and respect for your fellowman, be he black, white, Unionist or Republican. In too many cases today, freedom is regarded by some as synonymous with the right to openly show disrespect and disloyalty. This has led to violence and destruction in an elusive pursuit of vengeance or happiness for the moment.

The majority of our youth are the brightest, most alert, most idealistic and most creative we have ever had. The majority are responsible dedicated Americans. Surely many have doubts about some things. This is good. This country since it began has had doubts. Therein lies some of its strength. A young Congressman from Illinois was opposed to the Mexican War — his name, Abe Lincoln. One-half of the population of this country during our Revolutionary War was loyalist. Most of the New England states were violently opposed to the War of 1812. Doubting is nothing new. Yet there can be no cause which transcends a citizen's responsibility to the law.

We must renew our support, our service and our attention to fundamental institutions, home, church and school. Of these the most important, the grassroots of this country's strength, the source of its power and the hope for its preservation, is the home. The stalwart proponent of moral growth is the home. Without strong moral foundation, families and society disintegrate. Family life must involve mother, father and all children. Parents cannot demand education for their children and at the same time decline discipline for themselves.

Each American should know something of his heritage, purpose, and what is expected from him. Each of us is a by-product of our forefathers, our beliefs, our conflicts and our hopes. America remains young, courageous and eager to improve. Each American must pass to his sons and daughters a love for America. Patriotism is not just responsibility, it is duty. Peace is not possible anywhere without patriotism.

We can ask for our Nation no greater inspiration than: "America! America! God mend thine every flaw. Confirm thy soul in self control; thy liberty in law."





The President of the United States in the name of The Congress takes pleasure in presenting the MEDAL OF HONOR to

Donald E. Ballard  
Hospital Corpsman Third Class  
United States Navy

for service as set forth in the following

**CITATION:**

For conspicuous gallantry and intrepidity at the risk of his life above and beyond the call of duty on 16 May 1968 while serving as a Corpsman with Company "M", Third Battalion, Fourth Marines, Third Marine Division in connection with operations against enemy aggressor forces in the Republic of Vietnam. During the afternoon hours, Company "M" was moving to join the remainder of the Third Battalion in Quang Tri Province. After treating and evacuating two heat casualties, Petty Officer Ballard was returning to his platoon from the evacuation landing zone when the company was ambushed by a North Vietnamese Army unit employing automatic weapons and mortars, and sustained numerous casualties. Observing a wounded Marine, Petty Officer Ballard unhesitatingly moved across the fire-swept terrain to the injured man and swiftly rendered medical assistance to his comrade. Petty Officer Ballard then directed four Marines to carry the casualty to a position of relative safety. As the four men prepared to move the wounded Marine, an enemy soldier suddenly left his concealed position and, after hurling a hand grenade which landed near the casualty, commenced firing upon the small group of men. Instantly shouting a warning to the Marines, Petty Officer Ballard fearlessly threw himself upon the lethal explosive device to protect his comrades from the deadly blast. When the grenade failed to detonate, he calmly arose from his dangerous position and resolutely continued his determined efforts in treating other Marine casualties. Petty Officer Ballard's heroic actions and selfless concern for the welfare of his companions served to inspire all who observed him and prevented possible injury or death to his fellow Marines. His courage, daring initiative, and unwavering devotion to duty in the face of extreme personal danger, sustain and enhance the finest traditions of the United States Naval Service.

*HM2 Donald E. Ballard was released to inactive duty in the Naval Reserve on 26 February 1970 and resides in Kansas City, Mo., with his wife and two children. The Medal of Honor was presented to Petty Officer Ballard by President Nixon in ceremonies conducted at the White House on 14 May 1970. ☰*



CAPT Chester E. Briggs Jr., wearing the ribbons indicative of his 40 exciting years as a U.S. Navyman, scans the coast of the Republic of the Philippines as the hospital ship USS Sanctuary (AH-17) enters Subic Bay.

## FORTY YEARS OF LIVING HISTORY

By JO3 Michael Rash, USN

A living history book of naval warfare walks the decks of the hospital ship USS Sanctuary (AH-17). He is CAPT Chester E. Briggs, Jr., the ship's commanding officer. An adventure-filled career which spans 40 years might well qualify him as the Navy's resident historian.

CAPT Briggs entered the Navy as a seaman in 1930 and from that point until the present, he has hit every step in the Navy's levels of advancement except that of chief petty officer. He bypassed that rate in 1941 when he jumped from first class petty officer to chief warrant officer.

Friendly and modest, the Sanctuary's skipper harbors an endless storehouse of tales describing his long and exciting career. Indeed, he could well be called a walking history book in view of his experiences in the old U.S. Asiatic Fleet and in the Pacific and European theaters during World War II. "Those were interesting days," he says, reflecting on his duty with the Asiatic Fleet.

Captain Briggs served as an enlisted quartermaster on a river gunboat in the Yangtse River Patrol from 1935 to 1938. He recalls that there were some 109 Japanese air raids on Chinese facilities along the river during that time.

Peering into his own past, the captain can look with a critical eye at current portrayals of the China of old. He is a personal friend of Richard McKenna, author of "The Sand Pebbles," and relates that the story "is not so far-fetched. Much of it is very true."

Captain Briggs' life during World War II seems to read like a history of that war. While aboard the aircraft carrier USS Yorktown (CV-5), he participated in the first offensive against the Japanese during the Marshall and Gilbert Island raids, and survived a bombing attack which killed 53 crewmen in the Battle of the Coral Sea. Later, he was wounded in the Battle of Midway when the Yorktown was attacked. In addition to his wounds, he slipped and plunged into the water as he was preparing to abandon ship. "I started down a line fully dressed and armed with a pistol, but I hit an oil spot and went down like a shot into the ocean," he says. "Struggling with all that

extra weight, I finally got to the surface and was spotted by a destroyer." He was fortunate enough to be picked up before a new wave of air raids, and was part of the salvage party which returned to the Yorktown the next day. Further attacks made salvage of the carrier impossible however, and he was evacuated to Pearl Harbor. His ordeal caught the attention of author Walter Lord, who used a half-page statement by Captain Briggs in his book "Incredible Victory," a documentary of the Battle of Midway.

After recovering from his wounds, the now Ensign Briggs changed directions and wound up in North Africa. At Safi Naval Shipyard, 100 miles south of Casablanca, Morocco, he was a harbor pilot tasked with measuring and charting harbor depths to assist the invasion's landing parties. Later, at Oran, Algeria, he became assistant port director and helped to prepare for the invasions of Sicily and Italy.

In still another change of scene, he was assigned to command Landing Ship Tank (LST) 57 in the invasion of Normandy. About this role he modestly proclaims, "We were just one of the thousands of ships which transported men and equipment to the beach on D-Day."

Returning to the Orient, the now LCDR Briggs served as executive officer of a destroyer-minesweeper which swept Wonson and other harbors in the Korean Conflict. Later commands included the destroyer USS Hyman (DD-732), Mine Squadron Eight, and a fleet training group. He also had a rather unusual assignment as chief of the Navigation Division of the Panama Canal Company.

In view of his many experiences, one might well wonder how it feels to command a hospital ship—a somewhat odd creature among U.S. Navy vessels because of its atypical mission. "Commanding a hospital ship is a unique experience," he says. "It brings you much closer to the Medical Corps and gives you a much greater appreciation of the work they do. Our main battery is not guns, but the hospital, and our mission is the health and well-being of everyone who comes to us for help."—PAO, U.S. Naval Station, Subic Bay. ■

## HIGHLIGHTS OF CINCPAC FOURTH CONFERENCE ON WAR SURGERY

The Commander-in-Chief Pacific Fourth Conference on War Surgery convened at the Sanno Hotel in Tokyo, Japan, 16–19 February 1970. With representatives in all fields of surgery from the U.S. Army, Air Force and Navy in attendance, the meeting was called to order by Chairman COL Edward H. Vogel, Jr., MC, USA. RADM Frank B. Voris, MC, USN, Surgeon, CINCPAC, in an opening address, outlined the objectives of the meeting: to update and revise the proceedings of the Third Conference on War Surgery.

"Triage: Principles and Practice in Vietnam" was presented by LCDR Joel A. Tobias, MC, USNR, 1st Med Bn., 1st Mar Div. The basic principles of triage utilized by the First Medical Battalion were reviewed. Initial examination was said to establish the extent of injuries and insure presence of an adequate airway secured in the following steps—stabilization of tongue in a forward position; insertion of endotracheal tube (formal tracheostomy was rarely needed); insertion of chest tubes when clinical evidence of pneumothorax and/or hemothorax was present. Large caliber chest tubes, preferably 36 to 40 French, were usually employed and placed in the anterior axillary line in the 4th interspace. The Heimlich valve was favored over under-water seal to insure ease of transportation from one area to another. Administration of nasal oxygen when indicated and establishment of sufficient routes for blood volume replacement formed an integral part of the initial evaluation. In order of preference, the following routes were employed for administration of large volumes of intravenous fluids: subclavian vein, femoral vein, antecubital, and lastly, the superficial jugular vein. Ideal fluid was blood, preferably typed and cross matched; in emergencies, type specific blood was preferred, and lastly, O Negative blood. Ringer's solution is no substitute for whole blood, and was primarily used until blood was available. The First Medical Battalion had been using fresh blood from a walking blood bank more frequently. The need to insure that a wounded patient had no live ammunition on his person when taken into the triage area was repeatedly emphasized. A specifically assigned, nonmedical member of the triage team was advocated for examining patients to detect explosives prior to the patient's entrance to treatment areas.

"A Year's Experience in Orthopedic Surgery at First Medical Battalion" was presented by LCDR Gary R. Gregerson, MC, USNR, 1st Med Bn., 1st

Mar. Div. This paper was presented in its entirety in the April issue of the Navy Medical Newsletter, through the courtesy of the author.

"Acute Pulmonary Insufficiency" by LCOL Bohn D. Allen, MC, USA, 106th General Hospital, Kishine, Japan was based upon experience in treatment of over 3,000 burn patients at the latter hospital. Sulfa-mylon therapy has reduced burn sepsis to a minimum, but an increase in deaths from acute pulmonary insufficiency has been noted. Excluding patients with significant associated trauma, practically no mortality in patients with 40% third degree burns or less had occurred. In the case of patients with 40–60% third degree burns, deaths were primarily attributed to acute pulmonary insufficiency. No survivals were reported among patients with more than 80% third degree burns.

Pulmonary insufficiency patients presented persistent and progressive tachycardia and hyperpnea with associated progressive hypoxemia. Chest X-rays revealed diffuse exudates which then become confluent; concomitant decrease in PO<sub>2</sub> and pH with a rise in PCO<sub>2</sub> were characteristic.

The following etiological factors were reviewed: prolonged hyperventilation; prolonged anoxemia; release of toxins; low pulmonary blood flow status; overinfusion with fluids low in colloids and high in sodium; surfactant abnormality; decreased pulmonary vascular tone; congestive atelectasis with abnormalities in the microcirculation; oxygen toxicity leading to hyaline membrane formation, and; disseminated intravascular coagulation and thromboembolism. Increased release of tissue thromboplastin, associated decrease in Factors II, V, VI, VIII, and X, with fibrinolysis abnormality, were encountered in thromboembolic cases.

Dr. Allen detected no significant difference in pulmonary insufficiency encountered in burn cases as compared to pulmonary insufficiency presented by patients in septic or hemorrhagic shock or in cases of severe non-thoracic trauma. Similarly, pathophysiological changes in the kidney, liver and brain resembled those seen in the lungs of patients with acute pulmonary insufficiency of traumatic origin; these changes were most compatible with a disseminated intravascular clotting abnormality and the associated thromboembolic phenomenon seen under these conditions.

"The Bacterial Flora in Wounds of U.S. Armed Forces Patients Evacuated from Vietnam to PACOM

Hospitals" was presented by CPT D. K. Ohashi, MSC, USA, 106th General Hospital, Kishine, Japan. Klebsiella and Aerobacter were most frequently grown on cultures from burn wounds; Klebsiella and Escherichia were most frequently found in patients with non-burn wounds. From traumatic wounds unassociated with burns, Pseudomonas, Staphylococcus and E. coli were commonly cultured. Cultures obtained from intravenous cannula tips (plastic intracatheters) removed after 48 hours or more were positive for Klebsiella, Pseudomonas and/or Escherichia in 68.6% of the cases. Sensitivity studies generally revealed Klebsiella to be sensitive to Keflin and Pseudomonas sensitive to kanamycin. Best results in sensitivity studies were achieved by the tube dilution method.

"Septic Phlebitis and Its Management" was presented by LCOL Bohn D. Allen, MC, USA, 106th General Hospital. He urged that a large central vein be employed in projected long term intravenous fluid therapy. The condition was reported to develop much more frequently when indwelling plastic catheters were positioned in small veins such as those in the lower extremity, hand, forearm and neck. The important clinical features cited were induration and cellulitis over the course of the involved vein with expression of cloudy serum or frank pus upon milking the vein toward the entrance of the catheter. The recommended treatment was total excision of the involved vein following proximal ligation of the vein to prevent systemic dissemination, with delayed primary closure of the wound. Consideration of a return to the use of needles for intravenous fluid therapy (rather than continued use of plastic catheters in small veins) was advised.

"Fat Embolism: A Questionable Clinical Diagnosis" was presented by LCOL H. G. Williamson, MC, USA, 106th General Hospital. Out of 40,000 admissions to the 106th General Hospital, six cases of fat embolism with a 50% mortality rate had been encountered by the orthopedic service. Four of the six cases occurred in patients who presented multiple fractures; the remaining two cases involved patients with minor fractures. Their clinical courses were characterized by progressive respiratory insufficiency with hyperpyrexia, tachycardia, tachypnea and elevated blood pressure.

Although infarction is considered the end result of a true embolus, infarction was not found in the involved organs (lung, brain and kidney) of these patients. Pathological findings included perivascular edema and capillary ruptures with multiple areas of interstitial hemorrhage wherein globules of fat were

noted. It was considered that capillary flow sludging led to associated injury of the capillaries, local and systemic anoxia, extravasation of fatty acids into adjacent interstitial tissue, and vasculitis. In the end result, local tissue hypoxia progressed to a systemic hypoxemia. The primary objective of therapy was best directed toward treatment of local and systemic hypoxemia, was the general consensus.

"Diagnosis and Treatment of Amebic Abscess of the Liver" was a review presented by the radiologist from U.S. Army Hospital, Camp Zama, Japan. In 20% of cases, E. histolytica is found in stools; this percentage could be improved by prompt submission of fresh specimens and early examination of same. The liver can be scanned in both A-P and lateral views but abscesses under 1.5 cm in diameter cannot be delineated. A small number of patients required surgical intervention when lesions became secondarily infected with bacteria; if the scan reveals numerous abscesses, extraperitoneal procedures may present problems. One such patient underwent three operations (an anterior subcostal approach, a posterior approach following resection of the 12th rib, and finally a transperitoneal approach using spinal needles to evacuate abscesses deep inside the liver) before the situation was brought under control.

"The Anatomic and Physiologic Basis for Treatment of Vascular Injuries—a Review of 480 Cases at the 106th General Hospital" was presented by COL Jackie Jacobs, MC, USA. Assuring an adequate closing pressure, which reflects an adequate flow, is essential in vascular repairs. To insure patency, the critical closing arterial pressure is 20 mm Hg; pressures below this level are associated with a minimal flow rate and occlusions following arterial repair under these conditions are common. Most vascular repairs from war trauma can be accomplished by excising the damaged area and performing an end-to-end anastomosis. If excessive tension is anticipated however, a vein graft is warranted. Fasciotomies of all significant distal compartments was recommended. Following an approximation or graft, if there is minimal flow but a viable extremity as evidenced by satisfactory capillary flow, or if an anastomotic leak develops from an anastomotic disruption, treatment by ligation of the vessel is recommended, to preserve the collaterals and frequently the extremity. Results of arterial ligation have been superior to those obtained where second grafting procedures have been attempted in an infected field. Collateral vessels are often disrupted by an attempt to insert a second graft, further compromising distal circulation to the extremity. End-to-end anastomosis or a vein graft was con-

sidered superior to patch grafting in injuries resulting from penetrating wounds.

"Experience With Decortication at the Second Echelon of Medical Treatment" was presented by LCOL Dennis P. Horan, MC, USA, USAH Camp Zama. The reduction in need for decortication of lungs appears to be the result of using larger bore tubes for drainage of hemothorax and the use of adequate suction instead of reliance on water seal drainage. Infected hematomas usually harbor gram negative bacteria. Of the 12 cases treated at the Camp Zama Hospital, there was one death and two patients required insertion of a new drainage tube following the decortication.

"Pulmonary Resection: The Treatment of Choice for Pulmonary Contusion Due to High Velocity Thoracic Wounds" was presented by MAJ Ronald P. Fischer, MC, USA, USARV 3rd Field Hospital. Accepted indications for acute pulmonary resection are massive bleeding not controllable by closed tube thoracotomy, and continued significant air leak. In the unusual patient who sustains a high velocity missile injury to the lung parenchyma with severe contusion of an entire lobe of lung and who fails to improve following 15-30 minutes of nasal oxygen administration by elevating partial pressure of oxygen, resection of lung is indicated. Indiscriminate thoracotomies and resections were not recommended. Wedge resections and over-sewing the contused area are not warranted.

"Review of 1200 Penetrating Injuries of the Abdomen" was presented by LCOL Bohn D. Allen, MC, USA, 106th General Hospital. The need for strict adherence to the basic surgical principle of adequate posterior dependent drainage at the time of initial surgery in severe abdominal wounds was admirably demonstrated by the author. A high complication

rate (50%) resulting from T-tube drainage of the common bile duct in treating liver injuries was noted; in comparable patients, the complication rate was 30% when T-tubes were not used. A staggering complication rate of 71% was reported for primary ileocolostomy procedures performed in cases of right colon injury. It was strongly recommended that ileocolostomy procedure be replaced by end-ileostomy and mucous fistula.

"Review of Stress Ulcer Experience at 249th General Hospital" was presented by MAJ Gary M. Nemhauser, MC, USA, 249th General Hospital. A 50% incidence of rebleeding was reported following vagotomy and pyloroplasty for bleeding stress ulcer. Vagotomy and partial gastrectomy were considered preferable when surgical treatment is indicated.

*The foregoing report was compiled from excellent reviews of the CINCPAC 4th Conference on War Surgery submitted by the following attendees:*

CAPT Lindsay C. Getzen, MC, USN  
CDR Joseph S. Myers, MC, USN  
CDR Martin L. Fackler, MC, USN

*We are indebted to these surgeons for a most comprehensive report, a splendid result of their combined efforts.*

*Beginning with the April issue, the Navy Medical Newsletter has reproduced, by sections, the proceedings of the CINCPAC Fourth Conference on War Surgery. All conferees were actively engaged in surgical care of Vietnam casualties and their written report constitutes a consensus position of participating surgeons. Future issues of the Newsletter will contain the remaining sections which have not yet been reproduced. It is considered that this exceptional and timely document will prove most helpful in furthering the professional care of casualties.*

## BURNS\*

### 1. General

Burned casualties in RVN (Republic of Vietnam) have increased in numbers and are requiring more and more attention. These burns at the present time are usually reaching a definitive treatment facility by helicopter in less than 40 minutes from the time of injury. These patients are resuscitated and definitive débridement is carried out at this echelon before the

patient is evacuated to a PACOM hospital. Most severe burns are reaching the Burn Center in Japan within 48 to 72 hours after being burned.

At the present time the majority of burns from RVN are evacuated to the Burn Center at the 106th General Hospital in Japan. This Burn Center was established in February of 1967 and since that time has received a majority of burns over 20 per cent TBS regardless of service branch. By centralizing the burn patients, a regimen for management which is uniform

\* Taken from proceedings of CINCPAC Fourth Conference on War Surgery, February 1970.

has been established. Patients can now be better stabilized and the disposition made in a more uniform manner. Those patients with small burns can be treated and returned to duty. Patients with moderate burns that are all partial thickness can be treated and then evacuated to the hospital closest to home. Those patients with more extensive burns associated with full thickness skin loss can be further resuscitated and stabilized. When the patient is stable, he can be safely evacuated back to CONUS.

In general, burns are being treated by resuscitation, débridement and application of Sulfamylon in RVN. After arrival in Japan, Sulfamylon therapy is continued until the patient is evacuated or the burns have healed.

## 2. Resuscitation

The principles of resuscitation that are used for any severely injured patient should be followed with the burn patient.

**A. Airway:** A patent airway must be established. This many times can be done by simple change of position of the head, suction of the nasopharynx and insertion of a nasotracheal or orotracheal airway. The indications for tracheostomy are applicable to burn patients as in any other surgical patient. A burn of the face, neck or upper thorax per se is not an indication for tracheostomy.

Indications for tracheostomy are:

- (1) Evidence of inhalation injury of the respiratory system, manifested by hypoxemia, bronchospasm, excessive bronchial secretions, or laryngeal edema.
- (2) Airway obstruction which cannot be relieved by less hazardous techniques including suction, position, and endotracheal tube.
- (3) Inhalation pneumonitis and signs of inadequate ventilation.
- (4) When there is concern about the adequacy of airway in the patient that is going to be air evacuated.

Tracheostomy should be done *electively* and under *ideal* conditions, preferably through a transverse skin incision.

**B. Fluids:** An estimation of fluid requirements is necessary as a guide for treatment in all burns. The Brooke formula is easily remembered and utilized in developing a plan for initial fluid administration. The fluids usually employed, Lactated Ringer's, Plasmanate, and 5% D/W, are all available in quantity in Vietnam.

### Brooke Formula

Determination should be made from the time of insult. Rule of Nine's can be used to estimate the percent of body burn.

#### First 24 hours:

Lactated Ringer's  $1.5 \text{ cc} \times \text{kg. wgt} \times \% \text{ burn}^*$

Plasmanate  $0.5 \text{ cc} \times \text{kg} \times \% \text{ burn}$

5% D/W: 2000 cc

1/2 to be given in first eight hours post-burn; 1/4 to be given in each succeeding eight-hour period

#### Second 24 hours:

Lactated Ringer's  $1/2$  to  $2/3$  of above

Plasmanate  $1/2$  to  $2/3$  of above

It cannot be over-emphasized that the Brooke Formula is only a guideline to therapy and not an iron clad path to successful management. Patients who are dehydrated prior to sustaining their burn or who have serious associated injuries may require much larger volumes of fluid in their resuscitation. Also burns with large areas of full thickness loss may require more fluid than that anticipated by the Brooke Formula. If additional fluid is needed, 5% D/W should be added.

Except for patients with pre-existing anemia, fractures or external source of blood loss, whole blood should not be administered within the first three days but may be required later in the post-burn period. When available, blood gas studies should be obtained to aid in the correction of acidosis, diagnosis of pulmonary complications, and acid-base deficiencies.

Clinical Dextran in dosage of 10 cc/kilo (up to 1000 cc) may be given as part of (not in addition to) the colloid requirement, for its anti-sludging effect. (Remember Dextran can interfere with blood cross matching!)

Subsequent to 48 hours post-burn, electrolyte free water is required and further salt containing solutions should be administered cautiously.

Dehydration in the later post-burn period is commonly due to large evaporative loss from the burn surface.

Serum sodium levels above 136 are indicative of such dehydration. Large volumes, 6 to 8+ liters of electrolyte-free water per day, may be required to replace such losses.

Osmotic diuretics, mannitol, etc., are usually required only in those patients with large heme pigment loads or those with larger area of burn whose urine output does not respond to volumes of fluids in excess of those estimated as required.

\* Use no more than 50 percent TBS burn for calculation but be prepared to add fluids in the same ratio in larger burns.

**C. Urinary Output:** The urine output in the first 48 hours post-burn is the best clinical guide to adequacy of resuscitation. An indwelling Foley catheter is necessary to monitor urinary output. When there is an early inadequate urinary output, inadequate volume replacement is almost always the cause rather than renal failure. The urinary output should be maintained at 40 to 80 cc/hour. When the output falls below this level the rate of fluid administration should be increased until the desired urinary output is obtained. When the output exceeds 100 cc/hour, the rate of fluid administration should be decreased. (Sulfamylon artificially increases urine specific gravity.)

Renal failure when it occurs early can almost always be traced to inadequate volume replacement. In patients with other associated crush injury or in patients who have chemical burns where hemolysis may be prominent, early acute renal failure may occur in spite of adequate volume replacement but it is rare. Renal failure is usually a late complication in burn care and is a manifestation of sepsis.

**D. Monitoring of the necessary parameters** includes serial hematocrits, electrolytes, hourly urine volume and central venous pressure.

### 3. Wound Care

**A. Débridement:** Débridement can invariably be carried out in the emergency room or ward and the use of general anesthesia at a time of rapid edema formation and diminished blood volume is decried. Such débridement can be carried out with minimum discomfort using intravenous analgesia. Devitalized skin should be removed, bullae excised, the *body hair shaved* from the involved and immediately adjacent areas, and the burned areas cleansed with a surgical detergent. The patient may thereafter be put to bed on surgically clean or sterile sheets. A cradle over the exposed burned surface with overlying sheet increases patient comfort and provides some protection to the wound.

**B. Wound management:** Topical Sulfamylon is applied to the burn wound approximately one-sixteenth of an inch thick. The burn butter should be reapplied as needed when it is rubbed off by sheets or covers. Otherwise, the Sulfamylon should be applied every 12 hours. Once daily the patient should be placed in a tub of water and the burn wound inspected and debried. If no tub is available, the Sulfamylon can be washed off with saline-soaked 4x8 gauze pads. It is not absolutely necessary in the first 48-72 hours to remove the Sulfamylon; simple reapplication at 12-hour intervals is permissible. When the patient is

ready for aeromedical evacuation, fresh Sulfamylon should be applied and sterile fine mesh gauze applied and padded with 4x8 gauze or fluffs. Extremities can be wrapped with Kerlex in a loose nonconstricting manner. If NRC burn pads are available, these can be used to wrap the burn.

**C. Escharotomy:** May be required in circumferential third degree burns of the extremities or chest (rarely with deep second degree burns). Fasciotomy is seldom required and then only in particularly deep burns involving muscle or electrical burns where there is actual muscle tissue necrosis and vascular compromise.

Coolness and edema of distal unburned parts are normal accompaniments of burn injury and are not indications for escharotomy. Cyanosis, impaired capillary filling and progressive neurological changes are indications for escharotomy.

**Technique of Escharotomy:** (1) Incision along mid lateral and/or mid medial lines of extremities and along anterior axillary lines of the chest. The incision should carry across joint areas of increased constriction.

- (2) Throughout extent of third degree burn.
- (3) Whenever possible avoid superficial arteries, nerves, and tendons.

(4) General or local anesthesia is not required since incision is through third degree burn. (Anesthetic Area)

(5) Incision is carried only through dermis and immediately subjacent thin connective tissue layer—not into fat or through deep fascia.

### 4. Antibiotics

All burns other than the small superficial partial thickness burn should receive penicillin for the first seven days post-burn, to eliminate infection by *B-hemolytic streptococcus* which may occur. After this period antibiotics are discontinued and are only employed when specifically indicated, as in urinary tract infection, pneumonia, and septic phlebitis.

### White Phosphorous Burns

Initial treatment of these injuries varies with the facility. Use of a 20% solution of sodium bicarbonate for initial irrigation, or the use of dilute (less than 5%) copper sulfate solution for identification of phosphorous particles, is satisfactory. It is to be emphasized that copper sulfate solution is not to be used as a soak or a continuous dressing. Systemic toxic conditions can result from excessive or prolonged use. Caution should be exercised to avoid using copper sulfate which is not fresh, since old solutions

frequently lose water by evaporation and will approach 10 to 15% concentration. The burns are treated conventionally. The use of topical lithium solutions is precluded by marked heat of reaction and obnoxious fumes. There is no apparent specific advantage gained from the use of H<sub>2</sub>O<sub>2</sub> for irrigation.

#### Recommendations for Treatment

1. At the first echelon of medical care, all clothing should be removed and lavage with copper sulfate solution should be followed by wet (water or saline) dressings, to prevent re-ignition of phosphorous particles prior to their definitive removal in a hospital.
2. Resuscitation in conformity with the standard principles for management of a burned patient.
3. Top priority débridement of the areas of phosphorous burns with total removal of phosphorous particles. Removed phosphorous particles should be placed under water to prevent operating room fire.
4. Continued evaluation of hemolysis and hepatotoxicity of uncomplicated phosphorous burns regardless of percentage of total body surface burned.
5. Management of acute renal failure by conventional methods.

6. Routine measurement of 24-hour urine, copper and blood ceruloplasmin when copper sulfate is used in initial treatment together with search for previous exposure to other known oxidants.

7. Serial calcium and phosphate studies should be obtained along with frequent or constant ECG monitoring. Hypocalcemia with hyperphosphatemia may result and lead to cardiac arrhythmia. This may be managed by adequate oxygenation together with infusion of 0.1% xylocaine and IV calcium sufficient to correct the hypocalcemia.

#### Notes of Caution

1. *Anesthesia:* Caution is necessary in administering a general anesthetic to a burn patient (See Anesthesia Section); Anectine + hyperkalemia = death!

2. *Sulfamylon treatment:* In the event of significant acidosis, the Sulfamylon cream should be removed and therapy resumed 24 hours later.

3. *Urine output:* If urine output falls after the third to fourth day, furosemide or ethacrynic acid should be relied upon rather than excessive volumes of sodium bicarbonate, Plasmanate or mannitol, to reduce the risk of acute pulmonary insufficiency. ☺

## WINGS FOR AN ANGEL

*By JO3 Michael Rash, USN. Photos by PH3 Dennis McCloskey and JOSN Robert B. McCallum*

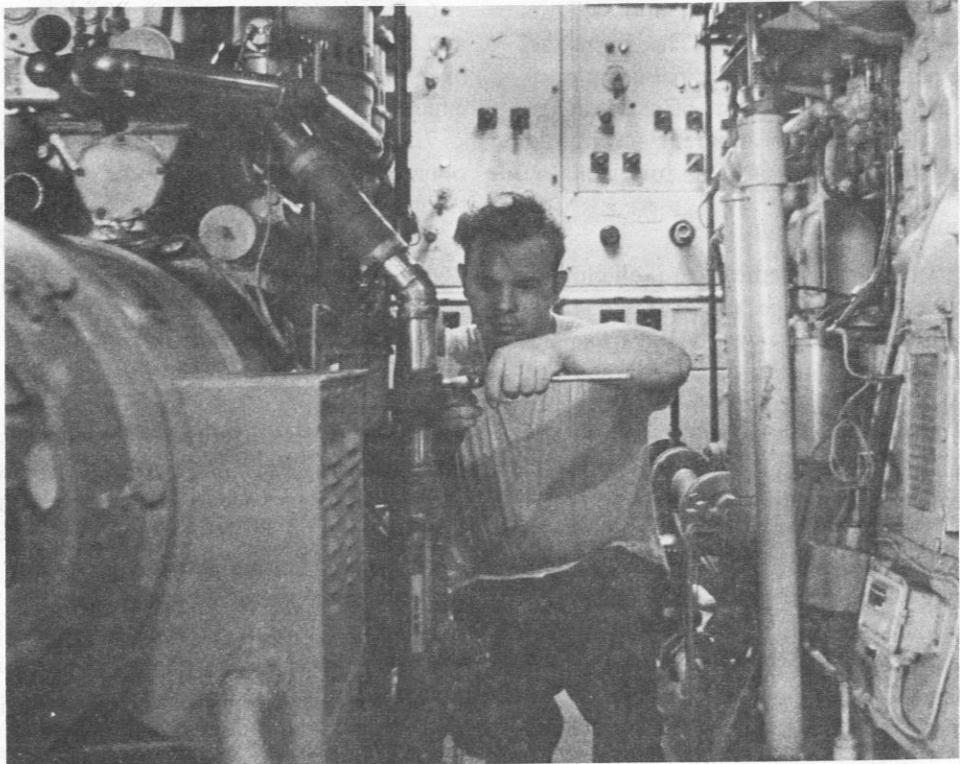
Even "Angels of Mercy" need wings to get them where they are needed, and require a helping hand behind their healing touch. This is also true of the doctors and nurses who operate the hospital in USS Sanctuary (AH-17). Their "wings" and "helping hand" are the ship's crewmen who supply their sister command—the hospital—with everything from life-saving electrical power to vital communications.

"We are so tightly geared to the hospital's needs that we exist almost solely for the hospital," reports CDR Raymond A. Madden of McLean, Va., the ship's executive officer, concerning the integral role played by the ship's crewmen.

The supporting role of the Sanctuary's crewmen is never more crucial than during the tense, perspiration-filled moments on the operating table in surgery. Doctors, nurses and assistants hover over their patient, intensely aware of the pulsations on an oscilloscope, or the living organs in the surgical field under the glare of operating room lights.

Suddenly the ship's life—power for lights, machinery and medical equipment—is lost. Vital functions are at a standstill.

In a matter of seconds, machinists in the ship's emergency generator room scramble to provide stand-by electricity. Working feverishly, they force the two life-giving generators to put stimulation back into the most important parts of the ship. "If they were using the heart, lung or kidney machines down in the hospital, and the ship lost power, we would probably save the patient's life," says Machinist's Mate Third Class Billy F. Williams about the engineers' job during such an emergency. Williams points out that such emergencies are rare, and that most of an engineer's time is spent in more routine tasks such as maintaining air conditioning and refrigeration throughout the ship. Air conditioning, however, is more than "routine" to the doctor concerned with clean, filtered air for his patients, or to the war victim whose comfort depends on beating the heat.



Machinist's Mate Third Class Herbert F. Cross of Boise, Idaho, makes mechanical adjustments in the emergency generator room aboard the USS Sanctuary. The generators supply the hospital with emergency electrical power.

When it comes to transporting patients to the mobile medical facility, the customary scene of a blaring ambulance screeching toward a metropolitan hospital is replaced with a vision of smooth, efficient helo evolution by deck personnel on the ship's flight deck. The LSE (landing signalman enlisted) uses various signals to guide patient-laden helicopters to a safe touchdown. These enlisted men must have landed at least 20 helos during night operations and 40 during day operations to qualify for the position of LSE.

Patients do not always arrive by helo, however. During recent operations off the Perfume River in I Corps, the ship encountered a sick, old Vietnamese man in a small fishing boat. "The doctor went down on our jacob's ladder (rope ladder) first to check him out," relates Boatswain's Mate Second Class Wayne Hager of Bluefield, W. Va. The elderly man was put in a stretcher and lifted aboard in a litter hoist.

Long before a patient ever arrives on the Sanctuary, much of his medical status is already known by the hospital. Doctors are made aware of his condition, the proper type of blood is prepared, and surgical equipment is readied for the moment when he will

be whisked down the covered corridor to surgery. Such preparation is facilitated by the radiomen who man the helo deck radio tower in the aft part of the ship. Shortly after helos depart in-country battlefields, the radio tower is in contact with them to gather medical data. By relaying this information to the hospital's duty desk and triage (receiving room), the radiomen help in determining whether a doctor should meet the helo, if stretchers are necessary, and what type of treatment will be required. The data-wealthy circuit between radio tower and hospital is dependent upon the ship's interior communication technicians who maintain its ever-ready ability to relay information.

In view of the navigational aid he gives pilots, the voice of Seaman Steven L. Walker of Mt. Vernon, Mo., a helo tower radioman, is just as welcome to them as it is to the hospital. "I give helos additional information while they are in foggy areas where visibility is poor," says Walker. "I tell them exactly what course to follow in order to get here quickly and safely."

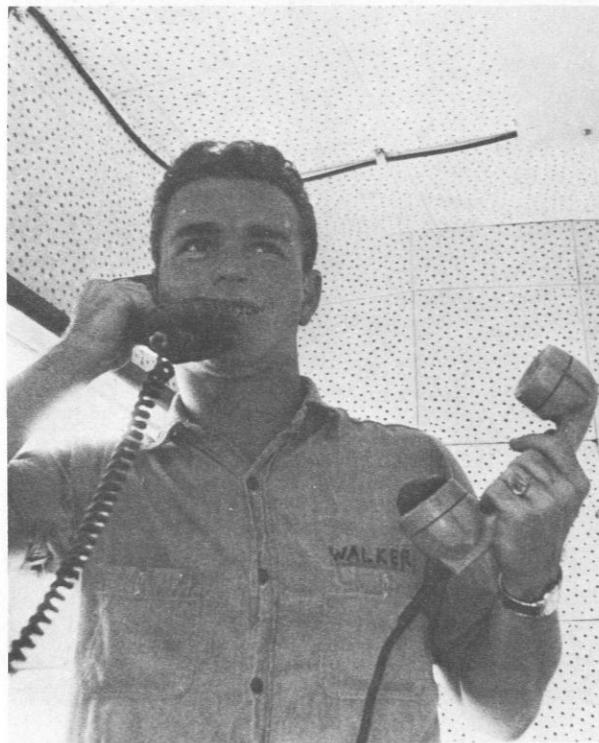
In radio central itself, a constant flow of messages keeps units in the Republic of Vietnam up to date on



A medical evacuation helicopter with sick and wounded aboard approaches the USS Sanctuary in DaNang harbor. As soon as the helo touches down, patients will be hurried off to first aid or surgery.



A landing signalman enlisted (LSE) guides a medical evacuation helicopter onto the flight deck of the USS Sanctuary in DaNang harbor, Republic of Vietnam.



Radarman Seaman Steven L. Walker communicates with a medical evacuation helicopter from his position in the helo deck radio tower aboard the USS Sanctuary.

the status of their men being treated on the Sanctuary. The ship's radiomen also coordinate medical evacuations with the Army's 24th Corps Headquarters ashore. "We average about 1,500 messages a month here," says Radioman Second Class Rodney G. Coates of Colorado Springs, Colo. "At least 1,000 of them concern the hospital directly."

These and countless other activities—from mapping the mobile hospital's course to ensuring its cleanliness—combine to make the bulging white ship with red crosses stand out in the minds of former American and Vietnamese patients. Through wings provided by the ship's crew, the healing angel continues to welcome all who come in need of medical care.

—PAO, U.S. Naval Station, Subic Bay. ☐

## THE EXDAN LESSONS

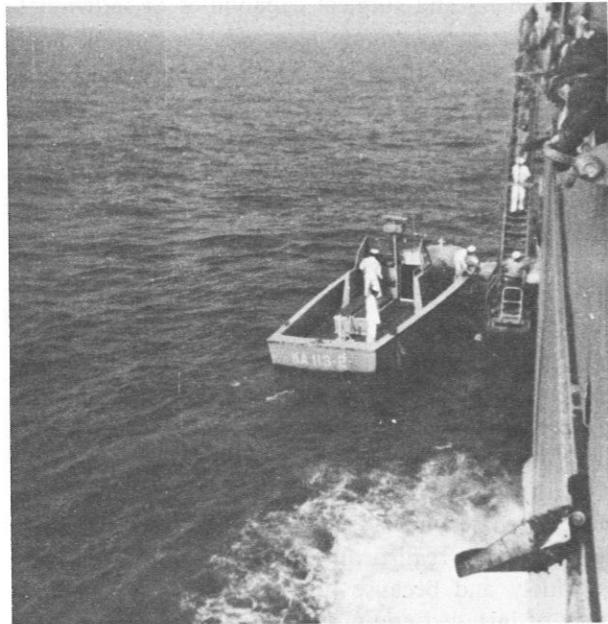
During the third week of May 1970 a major military rehearsal of one of the Nation's contingency plans was held in North Carolina. The exercise was coded as Exercise Exotic Dancer III and shortened for message purposes to "Exdan". The effort involved Army, Navy and Air Force military units as well as civil affairs personnel, relief workers and simulated embassy staff personnel. The military phase included a simulated airborne and amphibious assault by two divisions. A simulated Marine Division executed the amphibious landing (with both helicopter and across-the-beach assaults) while a simulated U.S. Army Airborne Division executed the coordinated airborne assault.

From the medical point of view plans were made to treat early casualties aboard the ships of the amphibious force. Following seizure of an airhead, the USAF was to establish fixed wing air evacuation facilities. Marine and Army initial treatment facilities would be moved into the area as the tactical situation permitted and the casualty treatment responsibility of the amphibious shipping would then devolve to definitive medical support of the Marine Expeditionary Force.

In accordance with the various plans, ships were assembled and loaded, troops alerted and embarked and the operation conducted. About 60,000 men were actually involved. The exercise was particularly significant from the medical point of view and revealed numerous areas in which improvement is urgently needed.

Among the problems requiring early attention were the following:

1. Casualty estimation. Although this is basically a nonmedical staff responsibility (personnel officers are responsible for estimating replacements required), it intimately concerns the medical department. Casualty estimating tables and guidelines are based on historical data—largely WW II—and may be difficult to validly relate to a proposed operation. On the basis of these estimates, medical requirements are developed. In "Exdan" there was a long delay in arriving at casualty estimates and fleet medical support requirements had to be developed before Marine estimates were available. The fleet medical department estimates of the support required were critically lower than the Marine personnel loss estimates when finally finished. As a result, crucial decisions regarding additional medical support had to be made on (D-2) with considerable doubt as to whether timely



augmentation could be effected. The lesson highlighted by this experience is that medical personnel assigned to operational staffs must become familiar with casualty estimating procedures and tables (U.S. Army Field Manual FM 101-10, *Staff Officers' Field Manual*, and NWIP 11/21(D), *Logistic Reference Data*). The NWIP reference is a Navy text in which medical planning data are largely based on USMC historical casualty data. In the event of planning delays by one organization or another, independently determined loss estimates should be of the same

order of magnitude so that only minor last minute adjustments in medical support facilities are required.

2. Medical and surgical capabilities of individual ships must be accurately assessed. In general, fleet medical augmentation to support a landing force is accomplished by deploying designated surgical and evacuation teams, with their equipment, from certain Naval Hospitals to selected ships, which are designated as "Casualty Receiving Ships". The implicit assumption is that the selected ships will be capable of furnishing an appropriate operating theatre or theatres and support services such as X-ray, sterilization, laboratory and postoperative care. An X-ray and a laboratory technician are members of the surgical team to augment the ship's staff. If two suitable adjacent rooms are available, the team can man two operating tables—and in fact carries a folding OR table in its equipment in case one is not available in the selected secondary space. The capability of individual ships to realistically support such a team varies widely and because of various ship alterations, status of installed equipment, etc., cannot be readily determined from ship "Class" descriptions. Determinations of whether a given ship can support a surgical team—which may be deploying for the first time—can best be determined by a dry run and relatively few of these have been held in recent years. Two reduced surgical teams (NH Camp Lejeune and NH Boston) participated in Exotic Dancer III and their comments will provide useful guides for essential and desirable improvements in the ships to which they were assigned. A survey of the ships actually available to the amphibious forces—from the viewpoint of serving as surgical team platforms—is urgently required. General layouts and individual unique features or problem areas should be made available to all our surgical teams to assist them in predeployment planning.

3. Overoptimism on surgical team capabilities. Because of the temporary and, often jury-rigged nature of surgical team facilities afloat, the number of major procedures which can be conducted in a full day is less than can be accomplished in a well organized surgical suite ashore. An additional factor is the frequency of multiple serious wounds in casualties. It was initially estimated that the primary casualty receiving ships in the Exdan operation, each with one surgical team (using two tables), could accept 100 litter and 200 ambulatory cases and probably perform twenty major operations per day for the first three days. After receiving approximately 40 mixed casualties, one team estimated they had a 10½ hour surgical backlog. Another team found they could not

operate two tables on their ship and determined the average cycle time for major cases, in their situation, was 3½ hours. It is obvious that planning staffs must revise sharply downward their estimates of surgical team capabilities. This also implies that estimates of the number of teams required to support various contingency plans should be revised upward.

4. Postoperative Care and Minor Surgery. A fact which quickly became apparent to the medical personnel in the amphibious units was that the personnel allowances for the surgical teams provided only the capability to perform immediate surgery on the most serious casualties. Ships' medical personnel are only



sufficient for normal crew peacetime sick call; the physicians and corpsmen with the embarked Marine assault troops are a most uncertain asset on D day and will almost certainly have departed by D+1. Since the majority of the wounded require minor procedures only, an overwhelming workload of minor procedures develops, plus the responsibility for post-operative care of the 10-12 major cases performed daily by the team. It was obvious that future emergency planning must include an additional pool of corpsmen (which could be the "Evacuation Teams") to be routinely deployed with each surgical team. Some of these corpsmen must be competent in the initial care of minor wounds and the postoperative care of major cases; others need only general nursing skills.

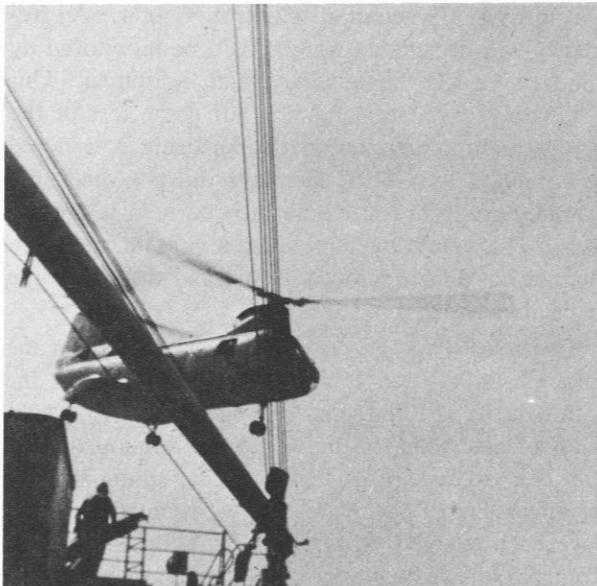
5. Specialty Surgery. Planning in the past has always recognized the need for orthopedic surgeons at the earliest levels of definitive care. They are adequately supplied to Marine shore medical facilities and are regular members of Surgical Teams for shipboard augmentation. In our regular organization, other surgical subspecialists appear on the staffs of Advanced Base Hospitals and Hospital Ships. In this operation, the nearest equivalent of an "Advanced Base Hospital" was distant by some three hours fixed wing flight time (available only after the airhead had been taken) and there was no Hospital Ship. Since a substantial portion of battle wounds involve the head, face and neck, there is a need for other surgical specialists, most particularly neurosurgeons. Surgical team equipment blocks contain a neurosurgical tray, but no electrocautery. CDR Martin Plaut, Chief of Neurosurgery at NH St. Albans, who has had recent Viet Nam experience, has been requested to prepare recommendations for a mobile neurosurgical team and equipment. His proposals will be circulated to other neurosurgeons for comment and a provisional team will be formed, equipped and exercised. Similar arrangements for ophthalmological and thoracic surgery are under consideration.

6. Communications and Casualty Evacuation Control. It was especially desired to test doctrinal concepts on these points and the results were dismal. For the first time in an operational exercise of this type, a special voice radio circuit was designated in the Communications Plan for medical coordination. This was essential since long delays were experienced in teletype message traffic. Designated stations on the network were the Joint Task Force, the Amphibious Task Force, each Casualty Receiving Ship, the Casualty Evacuation Control Ship, the Marine Division Hqtrs, the U.S. Army Component, and the USAF

Aeromedical Evacuation Control Center. A frequency was designated which could be monitored by standard USAF Single Side Band equipment. Unfortunately, a recommendation for game test of the medical communications networks being considered for adoption by USMC elements did not reach the planning group in time to be incorporated in the exercise. This would have provided a vital link between the medical units deployed ashore and the task force medical network.

The Joint Task Force station was deleted on the basis of anticipated low usage. This degraded the ability of the JTF Surgeon to arrange seaward evacuation of casualties from the Army component and also delayed receipt of daily medical status reports. Arrangement of Army casualty evacuation could have been effected through the Casualty Evacuation Control Officer; however, radio contact from his station aboard one of the Casualty Receiving Ships to the Army component was weak, intermittent and unreliable. Communications among the major Casualty Receiving Ships and the Task Force Command Ship were generally excellent but left much to be desired on some of the smaller vessels designated as Casualty Receiving Ships. In order to effect real time destination control of helicopters it was necessary for the Casualty Evacuation Control Officer to be located in or next to the Helicopter Direction Center (HDC). Since this is normally located on a Helicopter Assault Ship (LPH), casualty evacuation control cannot be effectively exercised from either the Task Force or the Attack Transport Group flagship. Luckily, the "Tactical Logistics" radio central—which controls, among other things, small boat traffic—is also located next to HDC so that the Casualty Evacuation Control Officer has access to movement information on both evacuation modalities.

Network overloading. The single voice circuit sufficed during this exercise, but only because the estimated casualty load was not actually "played". Had it been, the network could not have handled the message traffic using normal voice procedures. It became apparent that there is a requirement for a hot line" (sound power phone, intercom, etc.) aboard each casualty receiving or control ship from the sick bay area to the radio room so that medical information could be passed or solicited with minimal delay. It also became apparent that network control should rest with the Casualty Evacuation Control Officer—and during high traffic periods it might be necessary to convert the network from "open net" procedure to a "directed net"—i.e., satellite stations may converse



with each other only after receiving permission from net control. There is also a requirement to develop short message procedures—i.e., codes—for high traffic periods. Such codes and procedures should be incorporated in the Medical Annexes of various plans, since this is often the only portion of an overall plan or operations order held by the medical department. And, finally, it is apparent that we must train a cadre of Medical Department personnel in communications and evacuation control procedures who can be deployed in emergencies to assume this function. Such teams (MSC-HC) should be cross trained so that they could assume similar duties in the USMC "medical regulating" networks.

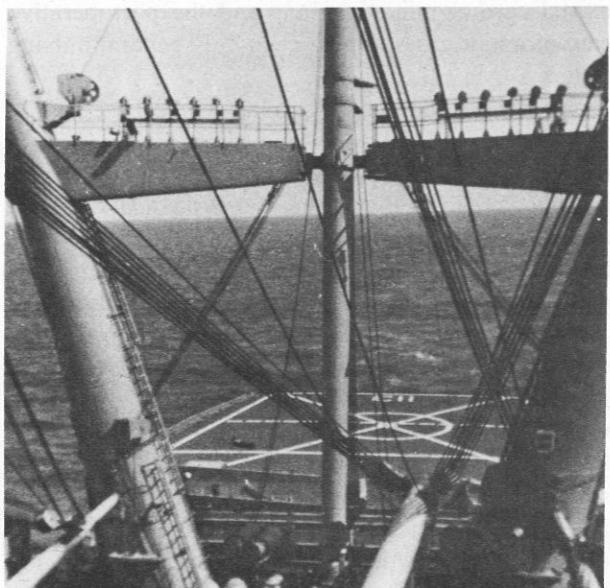
7. Problems ashore. In general there were three major problems:

a. Totally inadequate communications. This problem has been recognized and is well on the way to solution; approval of definitive medical radio communications with appropriate professional staffing and equipment is expected in the near future. A direct radio link between the ashore evacuation control point and the afloat casualty evacuation control officer is provided in these plans.

b. Inability to acquire helicopters. This problem is a result of the fact that there are no dedicated ambulance helicopters in the USMC organization and, of course, is magnified in a "game" situation—simulated casualties are never as impressive to helicopter mission control officers as real ones. Nevertheless, the problem area is real, and particularly in regard to secondary movement of patients—that is from an initial—and extremely limited—receiving fa-

cility ashore back to definitive facilities aboard ship. There is a tendency to feel that once a patient is in the medical chain all is well, and requirements for onward movement are not as acute as for initial evacuation from the battlefield. Unfortunately, the peak demand for helos for troop movements and initial supply missions may coincide with peak wounding periods and constant emphasis by medical personnel on patient movement requirements to cognizant air staff officers is required.

c. A third problem area that developed was



"Collecting and Clearing Companies"—and medical officers attached to assault battalions—were scheduled to be moved ashore very early, before a stable enclave had been established. Their talents could have been more effectively utilized afloat during the early phases and a decision to delay their landing was made by the Commanding General. However, due to the mechanics of the "play" an actual trial of this expedient could not be held.

8. Conduct of medical play. This is an area which needs much attention. Troop commanders are extremely loath to have simulated casualties assessed to their units—even though they are well aware that casualties occur in battle. The usual reason given is that it deprives the individual "casualty" of much needed field training. From the medical point of view,

the mere presence of large numbers of individuals tagged as casualties induces a sense of urgency and realism to the situation which can never be achieved in a "paper" exercise. The other important point is that evacuation lags—while they may be magnified due to the fact that the "casualties" are not *really* in need of urgent transportation—simply cannot be assessed by a paper drill. Assurances that a boat or helicopter could be made available at such and such a time are often of most dubious validity. Much of the potential value of "Exotic Dancer III" as a training exercise for medical personnel was lost due to the fact that only a trickle of simulated casualties was generated despite elaborate plans to the contrary.

9. Other "lessons learned" will be discussed in subsequent issues.—Code 75, BuMed. ♦

## PERNICIOUS ANEMIA AND CANCER OF THE STOMACH

By LCDR Neil R. Hoffman, MC, USNR\*

The increased incidence of stomach cancer developing in persons with pernicious anemia was first noted by Quinke in 1876, and subsequently has been documented in this country by various investigators. (Table 1) In 1945 Drs. Kaplan and Rigler, reporting on a necropsy study taking place between the years 1915–1943, found the incidence of stomach cancer occurring in persons with pernicious anemia to be 12.3%, or slightly greater than three times the expected incidence in an age adjusted, matched autopsy population. They concluded that on a statistical basis an etiologic relationship existed in persons with pernicious anemia developing stomach cancer. In 1955 Dr. Zamcheck, reporting the experience at the Boston City Hospital, stated that 10% of their patients with pernicious anemia could, during their lifetime, be expected to develop stomach cancer. Dr. Hitchcock, utilizing patients in a cancer detection center between the years 1943 and 1954, and Dr. Comfort, reporting the Mayo Clinic experience between the years 1935 and 1950, also confirmed an increased incidence in persons with pernicious anemia developing stomach cancer.

In an attempt to further define a cause and effect relationship between these two diseases, we followed

\* This article is based upon a study conducted by the author as a member of the Department of Medicine, University of Minnesota; and Hennepin County General Hospital, Minneapolis, Minnesota. Dr. Hoffman is currently a member of the staff at Naval Hospital, Oakland, California.

A report of this study was presented by the author at the 51st annual meeting of the American College of Physicians in Philadelphia, and has also appeared in *Geriatrics* April 1970, pp. 90-95.

TABLE 1

*Reported Incidence of Patients with Pernicious Anemia Developing Gastric Cancer in the U.S.*

Series	Incidence of stomach cancer
Zamcheck et al 1915 – 1951	10.0%
Kaplan and Rigler 1915 – 1943	12.3%
Hitchcock 1943 – 1954	18.3%
Comfort et al 1935 – 1950	7.3%
Hoffman 1948 – 1968	0.0%

a large group of patients with documented pernicious anemia, specifically looking for symptoms or diagnostic signs that might lead us, in these patients, to an early diagnosis of stomach cancer.

One hundred thirty-eight patients with pernicious anemia were followed at Hennepin County General Hospital between the years 1960 and 1968. (Table 2) Fifty-one patients were male; 87 were female. Our patients ranged in age from 33 to 87 years, the mean age being 74 years. Forty-eight patients were new to the study, having the diagnosis of pernicious anemia

made during this time period. Thirty-three patients had a previously established diagnosis of pernicious anemia, but experienced a clinical relapse during this time period, due to cessation of vitamin B<sub>12</sub> therapy. The additional 57 patients with pernicious anemia were in a clinical remission, and had been followed in our clinic for an average of 10.7 years.

A critical review of patient records, radiographic and gastroscopic examinations, and laboratory data (which included routine stool guaiac determination, complete blood counts, peripheral blood morphologies, and liver function studies) was conducted to see if a pattern could be noted that would aid us in establishing an early diagnosis of stomach cancer. We found that, in our series of patients, gastrointestinal complaints were surprisingly uncommon, in spite of the finding of atrophic gastric mucosa that was frequently seen on gastroscopic examination.

Thirteen of our 138 patients with pernicious anemia did develop cancer. (Table 3) Four patients developed carcinoma of the prostate gland; two patients had chronic lymphatic leukemia. Colonic cancer was

noted in three patients. One patient had multiple myeloma, two patients had breast cancer, and one younger woman had uterine carcinoma. In none of our patients with pernicious anemia, followed during this 8-year period, were we able to make a diagnosis of stomach cancer. Four patients did have gastric polyps that were noted on endoscopy, only one of which was seen on a routine radiographic examination. Seven of our patients had thyroid function studies compatible with a hypofunctioning gland, and in two patients diabetes mellitus was noted during this time interval.

Because our series was devoid of stomach cancer, a review was undertaken to see if there was some variance in our patient population to explain this disparity. The mean age of our patients studied was 74 years, and our average period of observation was slightly in excess of 10 years. These factors were felt to be pertinent, as, unlike many carcinomas which decline in frequency in patients past middle age, cancer of the stomach and pernicious anemia are both prevalent in older age groups. The manner in which our data was collected, patient age, sex distribution, and period of observation, were similar to the earlier studies mentioned. The main difference seemed to be the time periods in which the collection of data occurred. The earlier series all included a substantial number of patients that were studied between the years 1915 and 1950. During this time period, the incidence of stomach cancer, in this country, was significantly higher than it is today. Between the years 1951 to 1967 in the United States there was a 47% decline in reported cases of stomach cancer. During this same time period, other gastrointestinal malignancies, including pancreatic carcinoma, remained constant. Using incidence data available from the states of Connecticut and California, between 1963 and 1968, there continues to be a progressive but somewhat slower decline in new cases of stomach cancer being reported. More difficult to obtain than cancer statistics are the incidence rates for nonfatal diseases like pernicious anemia. Incomplete surveys as to the incidence of pernicious anemia in this country show the number of new cases reported has been rather constant over the past several years. It should also be noted that in Japan, where the incidence of stomach cancer today remains high, pernicious anemia is uncommon.

The nonrelationship of pernicious anemia and stomach cancer as noted in our series is in agreement with a current study in Great Britain by Maddock. Our study, and that of Maddock, do not support the existing concept that patients with pernicious anemia

TABLE 2

*Patients Studied at Hennepin County General Hospital 1960 - 1968*

Total number of patients .....	138
Male ..... 51	Female ..... 87
Follow-up	
1 - 5 years	48
5 - 10 years	33
- 10 years	57

TABLE 3

*Pernicious Anemia and Associated Malignancies Hennepin County General Hospital 1961 - 1968*

Total number of patients .....	138
Mean age of patients .....	74 years
Malignancy	
Carcinoma of prostate	4
Leukemia (Chronic)	2
Carcinoma of colon	3
Multiple myeloma	1
Cancer of breast	2
Cancer of uterus	1

have a greater incidence than the general population in developing stomach cancer. It would seem that if pernicious anemia and stomach cancer are causally related, and especially if there is a 10% to 18% greater incidence of stomach cancer in persons with pernicious anemia, this would be reflected in our series since the mean age of our patients was 74 years, an age at which the incidental occurrence of stomach cancer in this country is high. The fact that our series of patients with pernicious anemia failed to disclose any type of interrelationship between these two diseases raises certain questions:

Is pernicious anemia a premalignant lesion? If so, what factors were missing from our series to support this concept? Or were there certain factors operating in the previously reported series that are not operating now?

Some explanations for this variance may be:

1. The expected incidence of stomach cancer was significantly higher during the time period when the previously reported studies were compiled, and

there may have been a parallel, but totally nonrelated decline in stomach cancer in the general population, as well as in patients with pernicious anemia.

2. Previous studies indicating pernicious anemia as a premalignant lesion are possibly in error, in light of currently available statistics. This may also be due, in part, to the difficult and variable criteria used to establish the diagnosis of pernicious anemia during the time frame of the previous studies.

3. In order for premalignant lesions to be fully expressed, one might hypothesize that an exogenous carcinogen must be present. This carcinogen or activating factor, while present in the earlier studies mentioned, for reasons not apparent was not seen in our study.

Our series, consisting of 138 patients with documented pernicious anemia, closely observed over a 10-year-period, failed to manifest a single case of stomach cancer. Further prospective studies, utilizing gastric cytology and perhaps gastric biopsy material, may be necessary to confirm these findings. ♦

## THE GASTROENTEROLOGIST CORNER— INTRAMURAL HEMATOMA OF THE INTESTINE\*

CDR Gerald T. Roling, MC, USN†

The use of anticoagulant therapy in the management of occlusive vascular disease is familiar to all of us regardless of individual specialty. Likewise complications of its use occur in several organ systems, the gastrointestinal tract being the most common. In a recent case at the Naval Hospital, Philadelphia, an infrequent variant of gastrointestinal bleeding related to excessive anticoagulation was seen.

On 2 November 1969 a 53-year-old white male presented with a 24-hour history of mild generalized abdominal pain, weakness, and dizziness. Several years before he had suffered a right hemiplegia, and in 1965 a right endarterectomy had been performed because of bilateral carotid artery disease. Three months prior to the present admission Coumadin therapy was instituted because of dizziness. Three weeks prior to admission a prothrombin time of 28.8 seconds (14.2%) was obtained and Coumadin was

continued at a dose of 5 mg daily. On the morning of admission he developed hematemesis of dark blood. Hematocrit was 39%, WBC 28,700 with a left shift, BUN 43 mgm%, and prothrombin time was 47.3 seconds (less than 10%). He became hypotensive and two units of whole blood were administered. After a few hours the abdominal film in Figure 1 was obtained. Except for the presence of a dilated loop of small intestine in the left upper abdomen, no further information was obtained.

Therapy with naso-gastric suction and intravenous fluids was initiated. Prothrombin time returned to normal without the use of vitamin K. On the morning after admission esophagogastroduodenoscopy was performed and showed no abnormalities. An upper gastrointestinal series later that day (Figure 2) demonstrated an incomplete obstruction high in the jejunum. In this area the jejunum also revealed a "coiled spring" pattern. Although suggestive of intussusception, that condition would be quite unusual at this level because of the retroperitoneal position of the duodenum and its fixation by the ligament of Treitz. The radi-

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The opinions expressed herein are those of the author and cannot be construed as reflecting the views of the Navy Department or of the Naval Service at large.

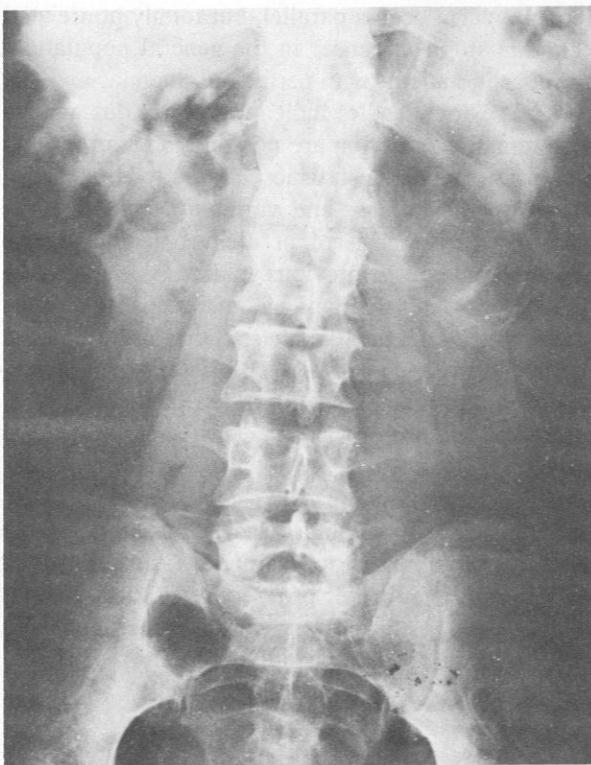


Figure 1. Abdominal roentgenogram on admission demonstrates a dilated loop of proximal jejunum.

ographic picture was consistent with early hemorrhage into the bowel wall.

The patient was treated with naso-gastric suction for 48 hours and then oral feeding was begun slowly. Nine days after admission duodenography through a duodenal tube was performed. As seen in Figure 3, further characteristic findings of intramural hematoma were presented. The lumen was diminished and narrow spike-like projections of barium extended to outline the normal width of bowel. This appearance has been described as resembling a "picket-fence", and is caused by thickening of the valvulae conniventes. At this time the patient was asymptomatic and the non-operative course was continued. One month after admission repeat X-rays showed disappearance of the abnormal jejunal pattern (Figure 4).

The findings presented in this case are typical of those seen with intramural hematoma of the bowel wall secondary to anticoagulant therapy. Although hematomas of this nature had been noted at laparotomy and autopsy in trauma cases, this entity was first described as a complication of anticoagulation therapy in 1952.<sup>1</sup> In the traumatic cases, there is a predilection for the lesion to occur near the duodeno-jejunal junction at the ligament of Treitz. The duo-

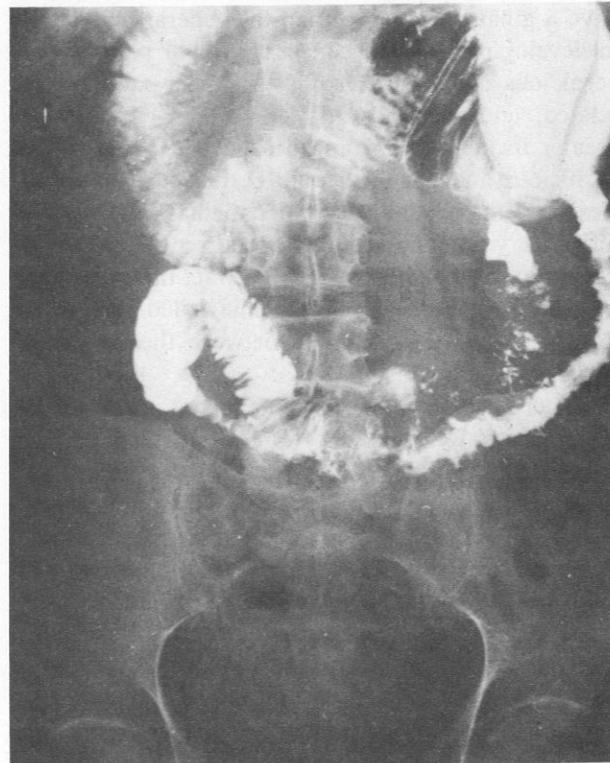


Figure 2. Upper gastrointestinal series on the second hospital day shows partial intestinal obstruction in the jejunum near the ligament of Treitz. The "coiled spring" sign suggestive of intramural hemorrhage is present.

denum crosses over the spine near this area and can be traumatized by an injury to the epigastrium, thus initiating hemorrhage into the duodenal wall. On the other hand the majority of the cases occurring with anticoagulation occur in the jejunum. Rarely the large bowel alone has been affected. The intramural hematoma probably begins in the subserosa, separating the serosa from the muscularis. The resulting tumefaction then bulges into the lumen, giving rise to the roentgenographic sign of an intramural mass. Infiltration of blood or of edema fluid into the mucosa may occur, causing thickening of the valvulae conniventes and producing the enlarged folds seen radiographically. The cause of the "coiled spring" pattern is unclear but is possibly due to the crowded mucosa draping over the hematoma as it slides into the lumen.<sup>2</sup> As the hematoma enlarges, dissection into the retroperitoneal space may occur or mucosal necrosis may result in an intraluminal hemorrhage.

Duration of anticoagulant therapy before the onset of intramural hemorrhage has been variable, ranging up to several years.<sup>3</sup> History usually reveals the gradual onset of abdominal cramping pain, distention,



Figure 3. Barium contrast study on the 11th hospital day demonstrates the thickening of the valvulae conniventes in the jejunal loop in the left abdomen. This "picket-fence" appearance is typical for intramural hematoma.

and vomiting. The prothrombin time has nearly always been prolonged, and often there are other signs of low prothrombin activity such as skin ecchymosis or hematuria. In our case, only gastrointestinal signs and symptoms were presented.

In this clinical setting, roentgenographic findings are often diagnostic of intramural hemorrhage.<sup>4,5</sup> Plain roentgenogram of the abdomen may show loss of the psoas shadows, distorted mucosal folds, narrowing of the lumen, or air-fluid levels in the small bowel. If obstruction is complete, a mass may be visualized corresponding to the involved loop of small bowel.<sup>6</sup> Roentgenographic examination with barium may reveal a variety of findings depending on the pathologic picture. One may see a rigid, narrow segment of bowel with coarse mucosal folds, an intramural mass, crowding together of the valvulae conniventes giving the "coiled spring" sign, or thickened mucosal folds with narrowed barium-filled troughs resembling a "picket-fence".

In summary, in the patient with a possible intramural hemorrhage, it is important to obtain a good

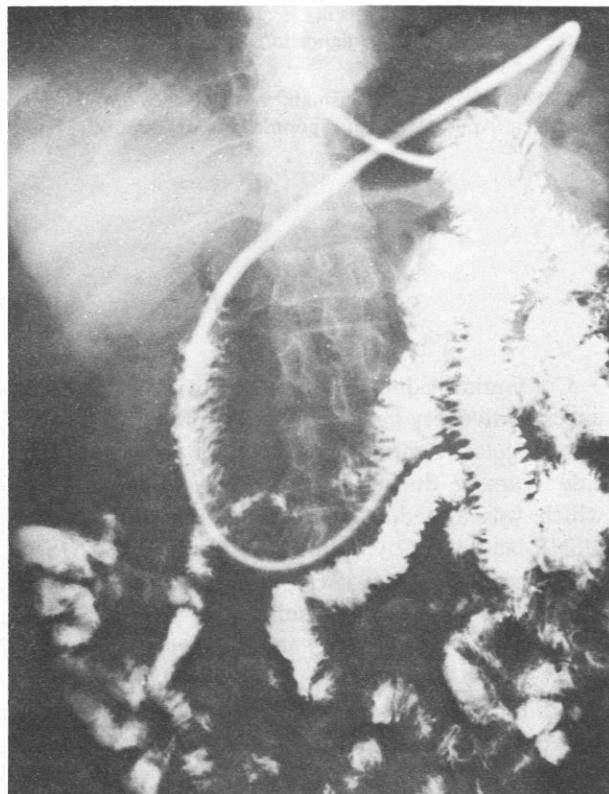


Figure 4. One month after admission the jejunum has returned to normal as seen by barium contrast examination.

history. History of trauma may be trivial or difficult to obtain since the majority of traumatic cases occur in children or alcoholics where the history is often unreliable. The demonstration of prolongation in clotting mechanisms distinguishes these cases from mesenteric occlusion where X-rays may appear similar. A non-operative approach in these cases associated with prolonged clotting is preferred because of the presence of diffuse vascular disease in many of these patients. It is mandatory however that each patient be followed closely. If signs of continuing hemorrhage, increasing obstruction, bowel perforation, or continued abdominal symptoms occur, surgical treatment may be mandatory.<sup>3</sup>

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## SUICIDE NURSING—OBSERVATION AND PREVENTION

Continuing Education in Nursing and Health Sciences, University Extension, University of California, Los Angeles, California presented a program on Suicide Nursing during the week of 8 August 1969 which was attended by LT Linda S. Pollock, NC, USNR and LTJG Charlotte Trostman, NC, USNR, staff members at Naval Hospital, Long Beach, Calif. The following report was submitted by Miss Pollock.

What are your thoughts and feelings about suicide? Are you one who never thinks about such a "disgusting thing?" Have you ever had a friend, relative, or co-worker tell you that he was contemplating taking his own life? What was your reaction—horror and recoil, or did you desire to help this person?

Before a nurse can intercede in a suicide situation she must understand and clarify her own feelings regarding suicide; her probable reaction to the information that someone is considering this action and her attitude toward involvement with such a person are of vital importance.

Why should a nurse concern herself with the thought of suicide? "The average 400-bed community medical-surgical hospital might expect no more than one suicide every five years."<sup>1</sup> An alert nurse may be able to detect the signs of an impending suicide and initiate action to provide the necessary assistance for averting tragedy.

What motivates nurses to interest themselves in this vast problem? Perhaps the desire to assist such patients prompts an interest in acquiring appropriate knowledge and background. Perhaps concern is based on personal contact with someone who has attempted to take his life. Is it the feeling of satisfaction that may result from successful intervention or is it the idea of universal omnipotence? Some may regard this professional challenge as an excellent method of working out their own feelings of suicide.

Their own attitude and previous conditioning prompts many nurses to tell the suicide patient to "go

away" while at the same time they are admitting to both the patient and themselves, "I don't know what to do when you tell me this and it makes me uncomfortable." This is characteristic of the nurse who ignores the depressed, or tries to jolly the patient out of thoughts about taking his life. She is cutting a vital line of communication, both verbally and non-verbally, and reflects the attitude of a large portion of today's society.

Suicide is comprised of two elements, the intention and the outcome. The intention is to die or not to die. The outcome is life or death. People who commit suicide fall into four groups: 1.) Those who intend to die and do die—these are inaccessible. 2.) Those who intend to die but live—they are discovered by accident. 3.) Those who intend to live but die—they plan to be discovered but are not. It is not possible to distinguish this group from group number (1). 4.) Those who intend to live and do live—they ask for help.

What motivates a person to take his own life? He may be directing his suicide to some other significant party such as his spouse, lover, parent, etc., to make them feel hurt. Thus he has an interpersonal reason. Or, he may have an intrapersonal reason such as a major fault in his psychic makeup. In some instances society dictates that he take his life. The classic example of this is the Japanese Kama Kazi. In some cases mental illness, or even the death instinct described by Freud as man's wish to die, may be the motivating force.

Many people give clues and drop hints that they are considering suicide. The nurse should be on the alert for a patient who:

1. Doesn't want to go home
2. Has sleeping pills, but does not sleep
3. Shows a sudden dramatic reversal in behavior
4. Is delusional and confused
5. States "I don't think I can go on much longer"
6. States "You are the only one who cares"
7. Has no friends

<sup>1</sup>The Hospital's Obligation Toward Suicide-Prone Patients, *Hospitals*, Vol. 40, December 16, 1966 by Robert E. Litman, M.D., and Norman L. Farberow, Ph.D.

8. Enters the emergency room with an unexplained wound

9. Complains of lack of success, inability to function in spite of promotions.

How can a nurse assess the Suicide Potential of a person? How can you know if a person may destroy himself in the present or in the immediate future? Obtaining information plays an integral role in intervention. Reviewing the patient's life style may increase his awareness of self-success, of people who can help him and clarify the situation. In order to do this adequately, an assessment scale should be made available. This increases nurse and patient confidence by elimination of stammering hesitation over delicate questions such as the method of suicide. The assessment scale also insures that details embarrassing to either nurse or patient are not omitted. Such an evaluation should include the following details.

1. Sex and Age—Males are more prone to suicide than females and people over fifty years are more prone than the younger age groups.

2. Pattern of Onset—The more acute the onset, the better the prognosis; repeated attempts, poor prognosis.

3. Method of Injury—The more specific the details the higher the suicide potential. A person who thinks he will take an overdose of pills but has no pills at the present time, presents a lower suicide potential.

4. The recent loss of a loved one or loved object.

5. State of patient's resources—financial and social; if low, suicide potential is increased.

6. Fantasy life—Suicide may be regarded as a magical symbolic attempt to solve conflict. It is not rational to want to die.

a. Omnipotence—This fantasy exists to an increased degree in the suicide patient. He cannot perceive death as being final and finds pleasure in contemplating the sorrow and unhappiness which discovery of his body after death will precipitate. The degree to which the patient perceives his fantasy is relevant; the more aware he is, the less the suicide potential.

b. Rescue Fantasy—Plans to be discovered before he is dead.

7. Organization of Patient's Ego—Effectiveness of patient's controls. Increased impulsiveness increases suicide potential; increased flexibility decreases suicide potential; increased relatedness to others decreases suicide potential.

8. Feelings toward death—if he considers death a dreamless sleep, as a friend or lover, or if he conceives of a life after death, his suicide potential tends to increase. If he regards death as eternal punishment, annihilation of conscious personality, or destruction of the body, his suicide potential is decreased.

Discussion about death with a suicide patient interjects a sense of reality for him. Many experience relief in finding that the nurse is not afraid of using the word suicide. Usually the suicide crisis is precipitated by a failure to adequately cope with some change—a new job, death of a loved one, or some threat which normal defenses have failed to offset. The patient becomes disorganized, increasingly confused, more and more tense and anxious about his ability to cope until he loses touch with reality.

What resources must a nurse bring to a suicide crisis? She must be able to listen and communicate with the patient; have a non-judgmental attitude; and show interest and empathy for the patient. The nurse may intervene by giving the patient some task to do; convince him that he should involve members of his family or friends; employ cognitive feedback (repeat what the patient has said but associate the connection between the threat situation and suicide ideas). The patient should be permitted to cry or ventilate his feelings of anger, hopelessness, and helplessness. He should be encouraged to explore solutions and voice ideas. The nurse may suggest alternate methods of coping—remembering that *the patient* should decide how best to contend with the problem. Most suicidal patients have a great deal of ambivalence and the suicidal state is limited in duration.



The author converses with a patient at Naval Hospital in Long Beach, California.

No one should make himself responsible for another person's life. Anyone who attempts to intervene in a suicidal crisis should share this work with others, for the associated tension and anxiety are often too great for one person to face by himself.

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## ANTIBIOTICS AND SEPSIS\*

Infections have been a frequent sequel of wounds throughout the history of military medicine. Adequate débridement, immunization, and antibiotics have significantly reduced the incidence of wound complications, such as gas gangrene, tetanus and streptococcal cellulitis. However, massive infection in wounds created by weapons of both modern (e.g., high velocity missiles) and primitive (e.g., punji sticks) warfare, remains a major problem at all levels of medical care, in-country, offshore and in CONUS facilities.

The following facts are extremely important in the evaluation of proper antibiotic therapy:

1. Antibiotics, regardless of the type, number and combination utilized, are no substitute for adequate débridement, fecal diversion where indicated, and proper drainage.

2. Abscesses, in general, require drainage as the primary therapeutic modality. Antibiotics play an important, but secondary, role in therapy.

3. Certain injuries carry significantly increased risk of subsequent sepsis, and such infection, once established, creates a critical life-threatening situation. Examples of such "high risk injuries" are:

a. Colon and spinal cord disruption by a single missile.

b. Right colon injuries associated with hepatic and/or small intestinal damage.

c. Transverse or left colon injuries associated with splenic and/or gastric damage.

d. Vascular injuries associated with large soft tissue destruction.

e. Booby-trap or mine injuries of the buttocks, perineum and thighs, often associated with lower extremity amputation, urinary tract and rectal injury.

4. The actual incidence of significant wound infection is high, particularly so in injuries involving more than one organ system. PACOM facilities are treating most of the significant septic problems, and at that level of care, sepsis is by far the greatest cause of

death; such sepsis being usually due to a gram-negative invasive infection. Statistics such as 15 per cent incidence of significant abdominal wound infections, 7 per cent incidence of subphrenic abscess in all intra-abdominal fragment wounds, a 72 per cent incidence of sepsis (abscesses, wound infection) following ileotransverse colostomy as a treatment for moderate to massive damage to the right colon—give some evidence of the magnitude of the problem of sepsis and its control in the management of war wounds.

5. Antibiotics, to be effective, should be as specific as possible to eradicate the particular sensitive invasive organism. The appropriate antibiotic therapy should be begun as soon as possible after wound contamination. Culture techniques and sensitivity studies are the only means to determine the proper antibiotic for the offending organism.

6. The use of antibiotic treatment in contaminated wounds (in contradistinction to wound infection) is not considered "prophylactic," but rather therapeutic, particularly in war wounds. This means beginning the antibiotic as soon as possible after injury, usually intravenously.

7. The primary problem in the use of antibiotics is the time required to get culture and sensitivity studies. Contaminated wounds, untreated with antibiotics during this "lag time," become infected wounds and if the wounds are "highly infection prone," disaster quickly intervenes in the form of sepsis. Numerous antibiotic regimens have been proposed to decrease the incidence of sepsis during this "lag time." Once cultures are confirmed, and sensitivity studies performed, the specific antibiotics needed for control of sepsis are evident.

8. No single regimen, plan, or program of "lag time" antibiotic coverage has proven effective at all levels of care. Numerous reports were received at this conference which confirmed the increasing septic problems with gram-negative organisms, their resistance to penicillin and streptomycin therapy, and their severe morbidity and mortality.

9. Cultures of wound surfaces have some relation

\* Taken from proceedings of CINCPAC Fourth Conference on War Surgery, February 1970.

to the type of wound infection, but such a relationship may be indirect and misleading. With proper culture techniques, all open wounds will be found to harbor organisms; whether or not invasive wound infection is present is another question. The use of penicillin results in suppression of gram-positive organisms on the wound surface, and with time gram-negative organisms can be cultured from these wounds. The use of streptomycin seems to enhance the more rapid appearance of gram-negative organisms in the wounds, and the great majority of these organisms will be resistant to this antibiotic.

10. Sepsis may mask malaria, as well as malaria mask sepsis. Numerous patients are being seen with both bacterial infection and malaria. Both appropriate antibiotic and antimalarial therapy must be utilized to control such sepsis.

11. If antibiotics are to be used effectively they must be used in adequate dosage and for adequate times. All too frequently the course of antibiotic therapy has been illogically conceived, erratic, inadequate, both in duration and dose, and even prolonged far in excess of therapeutic need. Such use not only does not help the patient but, even worse, encourages the development of resistant organisms.

On the basis of the above facts, the following recommendations are made:

1. Frequent culture, re-culture, and rere-culture of all contaminated wounds in septic patients doing well, are not *per se* an indication for switching antibiotics.

2. High dose penicillin therapy (e.g. 20 to 40 million units I.V. per day) has proven effective in controlling the gram-positive infections and some gram-negative ones. Penicillin is recommended in most seriously injured patients who are not allergic to it.

3. Proper gram-negative "lag time" antibiotic coverage must be determined by each local hospital staff, using as guidelines their individual experience based on previous culture populations.

4. Streptomycin is *NOT* felt to be a suitable antibiotic for use during this "lag time". Its use as a "prophylactic" antibiotic is both ineffective and hazardous.

5. Careful and concise antibiotic orders must be written, including dosage, route of administration, time of therapy, and duration. Culture reports frequently are missing at the time of chart transfer to other medical facilities. Flight tags must accurately reflect antibiotic therapy during the process of evacuation. (*This likewise applies to antimalarial treatment.*)

6. The problems of sepsis and the proper use of antibiotics are not solved satisfactorily at present. Intensive research must be conducted in these areas. Wound swab studies are not sufficient, and may be misleading. The role of topical antibiotics, bacteriostatics and germicides in war surgery needs further and continuing study. Constant and diligent research is necessary to intelligently provide the "best antibiotic treatment during the lag time." ☺

## THE PSYCHIATRIC MANIFESTATIONS OF CEREBRAL MALARIA

*W. Webster Blocker, Jr., MD, Albert J. Kastl, Jr., PhD, and Robert B. Daroff, MD,  
Amer J Psychiat 125(2): 192-196, August 1968. Copyright 1968,  
the American Psychiatric Association.*

*During a ten-month period 1,200 U.S. soldiers were admitted to an Army hospital in South Vietnam with falciparum malaria. Nineteen developed "cere-*

bral malaria," and three of these showed dramatic personality changes manifested as apparent "functional" psychoses. Further evaluation including psychological testing, however, led to the impression that the symptoms had a definite organic basis secondary to cerebral involvement. The authors stress the prognostic implications of differential diagnosis.

This study was conducted at the 935th Medical Detachment, 93rd Evacuation Hospital (U.S. Army), Long Binh, South Vietnam. The authors acknowledge the assistance of Maj. John A. Bowman, Lt. Stephen Lifrak, Specialist 5th Class Bennie Stover, Specialist 4th Class John Posh, and Specialist 4th Class Robert Quick.

bral malaria," and three of these showed dramatic personality changes manifested as apparent "functional" psychoses. Further evaluation including psychological testing, however, led to the impression that the symptoms had a definite organic basis secondary to cerebral involvement. The authors stress the prognostic implications of differential diagnosis.

Malaria secondary to *Plasmodium falciparum* (estivo-autumnal, malignant tertian) is frequently encountered among U.S. forces in South Vietnam. Approximately 1,200 soldiers were admitted with falciparum malaria.

parum malaria to the 93rd Evacuation Hospital, Long Binh, South Vietnam, between January and November of 1966.

When a patient with confirmed parasitemia displayed signs of central nervous system dysfunction not explained by severe hyperpyrexia, anemia, or metabolic abnormalities, the diagnosis of "cerebral malaria" was made. Nineteen of the 1,200 cases were so diagnosed. The pathophysiology of this neurological syndrome is cerebral anoxia due to either thrombosis or reduction of the oxygen-carrying capacity of the infected erythrocytes. The symptomatology is probably dependent on the brain area anoxia, and almost every neurological sign has been reported.

These 19 cases can be divided by clinical appearance into five groups: (1) disturbance of consciousness (extreme lethargy, coma); (2) acute organic brain syndrome (confusion, disorientation, and intellectual deterioration); (3) movement disorders (myoclonus, chorea); (4) focal signs (hemiparesis); (5) personality change (apparent "functional" psychosis). In this report we will present and discuss in detail the three patients with personality change.

#### Evaluation

Each patient received psychiatric and neurological evaluations and was given a battery of five psychological tests: the Wechsler Adult Intelligence Scale (WAIS), the Wechsler Memory Scale (WMS), the Bender Visual-Motor Gestalt Test (B-G Test), the Rorschach test, and the Minnesota Multiphasic Personality Inventory (MMPI). The first four instruments were administered twice; once while the patients were acutely ill and again after clinical recovery. The MMPI was administered only after recovery. The same testing pattern was followed for seven cerebral malaria patients without personality change and nine malaria patients without cerebral involvement or personality change.

#### Case Reports

##### Case 1

A 32-year-old white married sergeant 1st class was admitted to the 93rd Evacuation Hospital with a two-day history of fever, retro-orbital headaches, and generalized myalgia. On admission his temperature was 102°F and by the second day it was up to 105°F. Following this temperature spike, blood was drawn for a malaria smear, and the patient was started on a malaria treatment regimen of quinine, 10 grains three times a day, pyrimethamine, 25 mg three times a day, and Gantrisin, 500 mg four times a day.

The malaria smear was reported positive for *Plasmodium falciparum*.

By the sixth hospital day, his temperature was down to 100°F and he remained afebrile thereafter. He continued to improve satisfactorily until 3 a.m. of the sixth hospital day. At that time the nurse's notes report, "Behavior peculiar, states he is leaving for his unit, speech disoriented. All of family wiped out. Did not sleep all night." At 6:30 a.m. he was missing from the ward. He was found a few minutes later at the helicopter pad adjacent to the hospital, dressed in hospital pajamas, and saying that he was trying to return to his unit.

A mental status examination at 11:15 a.m. revealed an impaired attention span and a waxing and waning of concentration. The patient was oriented to time and person but slightly confused about location. Abstraction, recent memory, and fund of information were moderately impaired. He made four errors on serial subtraction by 7s. On serial addition by 3s to 20, he made one error.

He reported visiting with his parents on the ward during the previous night. Both from them and a special radio of indefinite location, he claimed to have received the message that his wife and children had been killed during the night. He felt he must return to the United States to attend their funeral. The details of the alleged incident were highly peculiar—the patient reported that his family had been killed in front of their house by a flock of birds (shaped into a ball) plummeting to the earth. His affect in reporting this event was inappropriately unemotional.

Between 1 and 3 p.m. the battery of psychological tests was administered. Subsequent to the testing he was started on chlorpromazine (Thorazine), 100 mg four times a day, and was transferred to the psychiatry service. He slept well that night and the next morning he was markedly improved. He was able to recall most of the events that had occurred the preceding day. He likened his experience to being in a bad dream.

The results of psychological testing performed while the patient was acutely ill were consistent with moderate organic dysfunctioning. Generalized intellectual impairment was suggested by WAIS scores in the dull normal range (Verbal IQ=90; Performance IQ=85; Full Scale IQ=87). The impairment was particularly pronounced on tasks of visual motor speed and skill (digit symbol and object assembly subtests). B-G Test results further highlighted the visual motor deficit—the patient showed great difficulty in making dots, small circles, sustained curve

lines, and angles. Some basic Gestalt patterns were lost, and several designs were run together.

A moderate degree of memory loss was suggested by a Memory Quotient of only 67 on the WMS. (The MQ should be equal to the Full Scale IQ.) Particularly pronounced deficits were noted in orientation, recall of paragraphs from memory, and learning pairs of associated words. An inability to attend was indicated by the recall of only 4 digits forward and 3 backward on the WMS. Fluctuations in quality of performance within individual tests were pronounced. There was some impairment in the capacity to abstract: e.g., the proverb "Shallow brooks are noisy" was said to mean "Water bubbling over rocks aren't always quiet."

Reexamination only one week later revealed a disappearance of the organic pattern previously noted. Intellectual skills were in the bright normal range, a gain of about 25 IQ points (Verbal IQ=117; Performance IQ=105; Full Scale IQ=112). Scores on the digit symbol and object assembly subtests had almost doubled. This improved visual motor performance was also marked on the B-G Test—Gestalten were correctly reproduced, there was no difficulty with curved lines, and only a trace of the former difficulty with dots and small circles.

The Memory Quotient had almost doubled (67 to 124), and no disturbance in orientation was noted. The patient also demonstrated above-average recall of paragraphs and paired associate learning. His capacity to attend was restored, as indicated by retention of 8 digits forward and 7 backward on the WMS. An example of his improved abstraction was his new response to the proverb presented earlier—"Usually shallow minds make more noise."

#### Case 2

A 30-year-old white single sergeant was admitted to the 93rd Evacuation Hospital with a three-day history of headache, backache, chills, and fever up to 104°F. On the second hospital day a peripheral blood smear was reported positive for *Plasmodia falciparum* and treatment was initiated which included quinine, pyrimethamine, and clinical dextran.

According to the nurse's notes of that night he was "looking for someone" and talking incoherently. In the morning on the third hospital day he appeared anxious. When asked about this he replied, "I'm scared," but he would not elaborate. Later in the morning he became more confused. He pulled out an intravenous needle and attempted to leave the ward saying, "My men are waiting for me."

The evening of the fifth hospital day he asked the

ward nurse about something he "heard" said about him at the nurse's desk. The nurse could not tell if he had misunderstood the conversation at the desk or if he was hallucinating. Forty-five minutes later he was well oriented but still thought he had overheard someone talking about him. The next day passed uneventfully.

About 8 a.m. on the seventh hospital day he became agitated and refused to take his medication. Prior to this his abnormal thoughts and behavior had been transient and of minimal concern. At this point the patient had been afebrile for approximately 36 hours and it seemed unlikely to his attending physician that this phenomenon was due to the malaria.

A neurological consultation was requested, and obtained at 1 p.m. The examination included a thorough mental status evaluation. The patient was cooperative and demonstrated no abnormal thought processes. He was oriented to time, place, and person, and abstracted well on proverbs. The neurological examination was within normal limits. There was no evidence of neurological disease or acute organic brain syndrome.

Shortly after this evaluation he suddenly left his bed, went to a corner of the ward, and attempted to cut his throat with a razor. He inflicted only a superficial laceration and was restrained. He appeared very frightened and said, "I won't talk. You can't make me talk."

Psychiatric consultation was then requested. A mental status exam at 2 p.m. disclosed that he had attempted to kill himself because, he said, "I am better off dead than letting them torture me." He claimed overhearing people plotting to kill him. He also reported hallucinated scenes of a helicopter ride and of having many visitors during the hospitalization. He was oriented to name, date, and place, but confused about the length of his hospitalization.

Following the examination he was given 100 mg of chlorpromazine intramuscularly. He fell asleep about 4:25 p.m. and slept most of that evening and night. The next morning he appeared chagrined and embarrassed as he reviewed the events of the previous day. In retrospect, he described what he had experienced as though it were a bad dream. Thereafter he demonstrated no further abnormalities of thought.

Initial psychological testing was performed on the eighth hospital day and the results were consistent with only mild organic dysfunctioning. Retesting nine days later revealed a total absence of the organic indications noted earlier. His WMS Memory Quotient showed an increase of 26 points—from 96 to

122—with striking improvement in paragraph recall and paired associate learning.

### Case 3

A 23-year-old white single 1st lieutenant was admitted to the 85th Evacuation Hospital in Qui Nhon directly from combat with a history of chills and fever. A malaria smear on the first hospital day was positive for *Plasmodia falciparum*. Therapy was initiated with quinine and pyrimethamine. His temperature on admission was 104°F. It rose to 105°F on the second hospital day but dropped to normal levels by the fifth day.

At 2 a.m. of the eighth day he awakened quite confused. Later in the morning he became agitated and attempted to leave the ward. Psychiatric consultation was obtained and the patient reported that for two days he had been receiving messages from a radio transmitter in his mouth. The messages stated that the Communists were after him and that his father and family had been killed. Subtraction by serial 7s and proverb interpretation were normal. He was started on 400 mg of chlorpromazine daily. Forty-eight hours later he was calm, cooperative, and without delusions or hallucinations.

He was transferred to the 93rd Evacuation Hospital on his tenth hospital day. The transfer note indicated that the referring psychiatrist believed the symptoms to be a manifestation of a schizophrenic reaction. Our psychiatric evaluation revealed no disorientation or abnormalities of thought. He recalled having heard the voices telling him of the disaster at home and the threats to himself, but the entire episode was non-ego-alien.

Initial psychological testing was performed on the 15th hospital day and results were consistent with only mild organic dysfunctioning. He was reexamined one year later by another psychologist naive to the purpose of the examination. He found the patient to be essentially normal with no evidence of cerebral dysfunctioning. On the WAIS he demonstrated slight improvement in over-all performance and a definite improvement in visual motor speed and skill. The WMS Memory Quotient increased 14 points to 117, with marked improvement on paired associate learning and a diminution of intratest fluctuation.

### Discussion

There were several aspects of the illnesses shared by all three patients. These are of clinical and theoretical interest and are discussed here.

### Onset

Each of the three patients became manifestly psychotic after their temperatures had returned to normal, during what would appear to be the apparent "recovery" phase of falciparum malaria. While febrile, none had demonstrated signs suggestive of either gross cerebral dysfunction or toxic delirium. This seemingly delayed onset has not been noted in previous reports. Mention has been made, however, of the onset of malarial delirium prior to temperature elevation.

### Clinical Appearance

Each of these patients, at the time he became manifestly psychotic, was awake and alert. Complete neurological examinations revealed no neurological abnormalities. Each of the three experienced auditory hallucinations and delusions. Two had delusions of family members being killed and two had delusions of a paranoid nature.

On mental status examination none of the three patients exhibited gross signs of organicity. They remained oriented to name, place, and approximate date. Subtle findings of organicity were manifest, however. For example, each was unable to recall the length of his hospitalization, the name of his attending physician, and the content of previously consumed meals. In addition, two of the patients seemed to exhibit a waxing and waning of concentration and a diminished attention span.

Psychological testing revealed mild generalized loss of intellectual skills, moderate memory deficit, some impairment of visual motor integration, disturbance of attention and concentration, and in two cases impairment of ability to abstract.

Under the designation "malarial psychosis," previous reports have described similar phenomena: waxing and waning of consciousness, suicide attempts while delusional, delusions concerning the death of family members, confused attempts to rejoin military units, retrospective recall of the delusion as a dream, and prevalence of paranoid or persecutory delusions.

### Duration

The duration of the psychotic episode was brief. In two cases the symptoms cleared within only 24 hours; for the third case, 48 hours were required. All three patients were returned to duty upon discharge.

This brief duration is in sharp contrast to previous reports in which the symptoms persisted from days to months and occasionally beyond a year. We have no clear explanation for this discrepancy except perhaps

earlier diagnostic recognition and improved treatment methods for malaria.

#### Predisposition to Psychosis

Several reports suggest that patients who develop a malarial psychosis are predisposed individuals. Other reports bring this conclusion into question. A review of the past history of our three patients disclosed no evidence of overt psychosis, and psychiatric interview after recovery revealed no predisposition to psychosis, barring marked cerebral illness or toxicity.

Psychological test results were initially regarded as consistent with these findings; the patients appeared essentially normal, with temporary cerebral dysfunction. Therefore, to evaluate the question of subtle predisposition, test data were carefully reexamined and contrasted with data obtained from 16 malaria patients without psychotic symptomatology. (The psychological test data of patients with cerebral malaria will appear in detail in another publication.)

A systematic pattern appeared when we compared our three patients. To summarize the test data, these three patients seemed to have a predisposition to psychosis related to above average intelligence and a mild paranoid orientation. On the WAIS the three psychotic patients, in comparison with the nonpsychotic patients, demonstrated significant superiority on comprehension and arithmetic subtests and statistically suggestive superiority on the picture completion subtest forming a pattern consistent with a mild paranoid orientation. The Rorschach revealed several features consistent with a mild paranoid orientation—over-alertness, need for protection, projection of hostility, and psychosexual conflict at the anal level.

#### Differential Diagnostic Considerations

Patients with a psychotic state secondary to an organic brain syndrome must be distinguished clinically from others with a nonorganic (functional) psy-

chosis. In previous reports this distinction has not been made. For example, Simpson and Sagebiel, reporting on their experience with cerebral malaria in World War II, excluded cases of psychosis without obvious signs of organicity from their report, stating that it was coincidental and not related to actual cerebral involvement. However, psychological testing was not performed on their patients.

In a patient with malaria a coincidental functional psychosis, perhaps precipitated by the stress of an acute malarial infection, may occur. Of the 1,200 malaria patients admitted to the 93rd Evacuation Hospital one patient was diagnosed as having a functional psychosis. During recovery from malaria and one week after becoming afebrile this patient manifested a paranoid schizophrenic reaction. Psychological testing was consistent with the diagnosis of schizophrenic reaction and no evidence of organicity was found.

Our experience, therefore, strongly suggests that a psychotic reaction occurring in a malaria patient, unrelated to high fever, anemia, or metabolic derangement, indicates cerebral involvement. A detailed mental status examination and, if necessary, formal psychometric testing should clarify the problem as demonstrated in our series.

The distinction is not entirely academic but rather has important prognostic implications. Our patients with the organic psychotic reactions were symptomatic for only 48 hours or less and were returned without residua to full duty. It is unlikely that a patient with a functional psychosis would have the same optimistic clinical course. For example, the patient mentioned above was still acutely schizophrenic when evacuated for further treatment one week after onset of symptoms.

(The references may be seen in the original article.)

## WEAK ANKLES. A STUDY OF COMMON PERONEAL ENTRAPMENT NEUROPATHY

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volume 3, 623-626, by permission of the Author and Editor.

**Summary:** Twenty-three patients were seen with entrapment neuropathy in a two-and-a-half-year pe-

riod. Symptoms consisted of pain, paresis, and paraesthesia in the distribution of the common peroneal nerve. Some degree of paresis was often present, which in five patients was severe enough to cause

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drop foot. In 20 patients decompression of the entrapped nerve at the neck of the fibula was quickly and completely successful. It is suggested that the ankle weakness which frequently follows sprains and other forced inversion injuries may often be at least partially due to entrapment of the common peroneal nerve.

### Introduction

Peripheral entrapment neuropathy is defined as a state of altered transmission in a peripheral nerve because of mechanical irritation from related anatomical structures, from which a neuropathy may arise. This condition may vary in degree and duration, from a self-limiting condition to one progressing to permanent impairment. The best-known peripheral nerve entrapment presents as the carpal-tunnel syndrome. Nevertheless, entrapment of the ulnar nerve at the medial condyle of the humerus and of the lateral femoral cutaneous nerve under the lateral end of the inguinal ligament has been known and described for much longer, and has been reviewed by Kopell and Thompson (1963).

Entrapment neuropathy may affect the common peroneal nerve as it winds round the neck of the fibula. The entrapment may be caused by direct injury, by external or internal pressure, or by indirect causes, such as by factors which alter the axis of weight transmission. This article describes a series of 23 cases of entrapment neuropathy of the common peroneal nerve.

### Analysis of Patients

The 23 patients (15 women and 8 men) in this series were aged from 15 to 60 (see Table). In three the condition was bilateral. In four its cause was direct. In 11 the cause was indirect, two being produced by closely adjacent abnormality—one a gross osteoarthritis of both knees, the other a lateral platform fracture of the tibia—and in nine the cause was more remote, following injury to foot and ankle. In eight there was no obvious cause. In one of these, an overweight girl of 15, pain was directly related to, and much aggravated by, ballet dancing. Even when associated with direct trauma the onset of symptoms was usually insidious. A common picture following an injury, either direct or remote, was that recovery did not take place as it should—pain (frequently poorly localized) often becoming steadily worse, at first being related to activity but later occurring predominantly at rest—the ankle becoming progressively weaker. This course might take some time, often a year or more.

### Treatment

Treatment was by operation, often under local anaesthesia, and consisted of carefully freeing the nerve, particularly by division of the tendinous arch of origin of the peroneus longus from the fibula. In over half the patients treated a distinct area of pressure could be seen at this point, sometimes leaving a depression or an area of hyperaemia. During operation the cutaneous branches were sought and preserved. The wound was closed by a few interrupted sutures to the superficial fascia and skin. Postoperative pain was minimal. No particular after-treatment was required, apart from a few days' rest with the leg raised and with as little weight-bearing as possible. In some cases return of muscular function was helped by graduated exercise and faradism. Rest and elevation were necessary because some increase in swelling might occur for a few days postoperatively, but this did not prevent operations being done on outpatients under local anaesthesia, provided they were able to rest at home afterwards.

### Results

Five patients suffered severe paresis. These all had "drop foot"; in two of them the lesion was bilateral and in all five it was long-standing. Four out of the five showed complete recovery within six weeks and the fifth had similarly recovered, except for a persisting weakness of the extensor hallucis longus in both feet, more pronounced in the right than in the left. Weakness and sensory loss in a further patient were associated with a large scar of a war wound involving the bellies of the extensor hallucis and peroneus longus muscles; motor recovery was incomplete because of mechanical interference by the scar. Sensory recovery was complete within a few weeks.

Of the 23 patients who have undergone operation, 21 have been relieved, 20 rapidly and completely. Eight months later the twenty-first suffered a recurrence of pain in the region of the knee which was different in nature and distribution. It appeared to be related to a mild osteoarthritic condition and disappeared after a short course of indomethacin. Three patients who required support by irons were able to discard them within three weeks of operation; in one of these the condition was bilateral. In two patients the operation failed; in the first the condition presented as a localized peroneal entrapment, but after a brief postoperative period of improvement it was clear that she was suffering from sciatica, which has since been partially relieved by physiotherapy and support. The second initially presented with sciatica in the left leg, but after a year it appeared that her

*Summary of Cases*

Case No.	Sex and Age	Side, Cause	Motor Effects			Sensory Effects					Operation Date	Speed and Degree of Recovery	Comment
			Weakness	Ankle Instability	Foot Drop	Paraesthesiae	Numbness	Clinical Sensation Impairment	Pain	Cramp			
1 F 35	L, none		-	-	-	+	-	-	+++	±	-	1/ 9/66	Rapid, complete
2 F 15	R, overweight ballet dancer		-	±	-	-	+	±	+++	-	+	19/12/66	Slow; complete after 9 months
3 F 57	R, none		+	-	-	-	-	-	++	-	-	6/ 1/67	Transitory, slight improvement
4 F 57	Gross osteoarthritis both knees	{ R L	+++ ++	+++ ++	+	+	-	-	+	+++	++	17/ 5/67 18/ 9/67	Rapid, complete
5 M 40	R, platform fracture tibia, 4/8/67		-	-	-	+	+	+	-	-	-	23/10/67	Rapid, complete
6 F 47	L, laminectomy for P.I.D. L5/S1, 1963		+++	+	+	-	++	++	+++	+++	+	23/ 3/68	Rapid, complete
7 F 29	L, long history, since 15		-	-	-	+	-	-	++ mainly nocturnal	+	-	8/ 4/68	Rapid (recurrence of pain in knee 8 months later, relieved by indomethacin)
8 F 30	L, none		±	±	-	±	±	±	++	-	-	11/ 4/68	Rapid, complete
9 F 23	R, none		±	±?	-	-	+	-	++	++	-	31/ 5/68	Rapid, complete
10 M 18	R, heavy blow on ankle		++	++	-	-	+	+	-	-	+	2/ 7/68	Full in 6 months
11 F 48	Severe ankle injury. R, 1963		+++	+++	+ Wore irons and T-strap 4 years	-	+	+	++	+	++	27/ 7/68	Full in 6 weeks
12 F 28	Fracture neck. R, fibula		±	±	-	-	-	-	+++	-	-	26/ 8/68	Full in 5 weeks
13 F 20	R, direct (dashboard injury 1/5/68)		±	-	-	-	+	± patchy	++ mainly nocturnal	-	±	12/ 9/68	Full in 6 weeks
14 F 41	L, several accidents at work		+	-	-	+	±	patchy	++	-	-	17/ 9/68	Slight transitory improvement
15 F 35	L, indirect Sept. 1965		+++	++	+	+	+	-	++	++	+	12/10/68	Rapid, full
16 M 43	L, direct shrapnel wound Stalingrad		++	+	-	-	++	++	-	-	-	23/10/68	Motor incomplete. Sensory complete
17 M 53	L, truck ran over big toe, 8/5/67 (indirect injury)		++	++	-	-	+	+	++	-	+	11/11/68	Almost complete in 2 months
18 M 55	L, no obvious cause. Previous exploration sciatic nerve		++	+	-	+	+	++	++	++	-	28/12/68	Full in 8 weeks
19 F 39	Direct injury on dashboard in car accident. 26/7/66. Bilateral	{ R L	-	-	-	-	-	-	++	++	-	1/ 2/69	Full in 5 weeks
20 M 60	None obvious. Bilateral	R L	++	++	+	-	-	-	+	+	+	24/ 2/69	Full except extensor hallucis longus
21 F 49	L, none		-	-	-	+	+	-	++	+	-	11/ 3/69	Immediate loss of pain and subjective sensations
22 M 41	Inversion/ adduction injury, L, ankle, 22/3/63		+	±	-	-	+	+	++	-	+	2/11/68	Gradual improvement, complete in 8 months
23 M 25	Inversion injury, L, foot		++	+	-	-	-	-	+	-	+	11/ 3/69	Complete in 3 weeks

symptoms had resolved, except for pain in the common peroneal distribution, with associated sensation impairment and muscular weakness. Operation provided only partial relief. She still complained of pain on the outer side of the leg into the foot, which interfered with sleep, and progress was complicated by acute exacerbation of a peptic ulcer with an anxiety state.

In the light of subsequent experience, operation would not now be carried out on either of these patients because their clinical picture was insufficiently clear-cut. In neither did a preliminary injection of prednisolone relieve the symptoms for long enough to provide adequate proof that entrapment was present. Neither patient, however, complained of any deterioration as the result of operation.

#### Illustrative Case Records

##### Case 6

A married woman aged 47 was first seen in hospital on 11 February 1968. She was complaining of severe poorly localized pain in the left leg. She had had an operation for prolapsed intervertebral disc L5-S1 five years previously, which had relieved acute left sciatica. She was left with weakness of the left foot and ankle which she had noticed for some months before operation, and which became progressively worse afterwards. She had a large semi-membranosus bursa, which was removed at operation on 12 February, but her symptoms were relieved for only 17 days, when pain returned with redoubled severity. She complained of intractable nocturnal cramp, which woke her several times a night. She had suffered from this for four years, but it had become much worse. Examination showed paresis affecting only the muscles supplied by the common peroneal nerve and an area of hypoesthesia over the lateral aspect of the leg and dorsum of the foot.

Common peroneal decompression was done on 23 March. All her symptoms were relieved immediately; by 11 April she showed virtually complete recovery of strength in foot and ankle. Four months later she was walking normally, making no complaints. She had had neither cramp nor pain and could run, which she had been unable to do for about seven years. Although she was appreciative of the recovery in strength to normal, she was most grateful for the relief of her pain.

##### Case 11

A married woman aged 48 was originally referred for pain in the left arm caused by acute carpal-tunnel

syndrome. During her convalescence she complained of weakness and pain in the right leg. Five years previously she had sustained a severe adduction/inversion sprain of the right ankle. She had jumped off a chair and landed with her right foot on a large plug so that her ankle "went over" and she fell heavily. After initial recovery, weakness and pain in her ankle increased over the next three months. Her doctor had the ankle radiographed, no abnormality being found. For another six months she continued at work, but pain and weakness in the right leg and ankle steadily worsened. Finally, another X-ray examination was carried out by an orthopaedic surgeon, who found that in the six months since the previous X-ray examination an appreciable degree of subtaloid osteoarthritis had developed. The patient was offered and accepted a subtaloid fusion, but as she refused general anaesthesia operation was not carried out.

For the next four years she wore an inside and outside iron and T-strap, but the condition gradually progressed to a "drop foot" accompanied by considerable pain and nocturnal cramp, with little alteration of sensation. Clinical examination localized the lesion to the common peroneal nerve, which was decompressed on 27 July 1968. Pain and cramp disappeared in 48 hours. In a few days her walking had improved and within three weeks full muscular strength had returned; she was walking normally; she could run up and down steps, which she had been unable to do since the original accident. Within six weeks of operation she had returned to her original part-time occupation of swimming instructress, which she had been unable to do since the original accident. She has remained well.

##### Case 19

A married woman aged 39 was involved in a head-on car collision on 26 July 1966, when she was thrown forward and sustained a heavy blow on the head from the windscreen, while both flexed knees were brought forcibly into contact with the dashboard. On 6 February 1967 she complained of severe poorly localized continuous pain in the region of the right knee. Careful repeated examination and investigation showed no evidence of internal derangement of the knee joint. She was not seen for 10 months while her thyrotoxicosis was being successfully treated, but she returned in December 1967, complaining of pain in both knees, the right being worse than the left.

Further repeated examinations showed no intra-articular cause of her pain. Though there was no evidence of weakness of any of the leg muscles, nor evi-

dence of sensation alteration, there was pronounced tenderness over both peroneal nerves at the neck of the fibula. Ultimately injection of betamethasone on the right side resulted in complete cessation of pain in that knee and leg for six weeks. Bilateral peroneal nerve decompression was carried out on 1 February 1969 with rapid relief of pain and nocturnal cramp, which had become increasingly severe since the accident. Four months afterwards she remained symptom-free.

#### Case 22

On 22 March 1963 a man aged 41 got his left foot jammed between a tractor linkage and its axle, twisting his ankle in forcible adduction/inversion. X-ray examination at the time showed no fracture, but four months later he complained of persisting pain, swelling, and weakness in the ankle unaffected by support and by vigorous active physiotherapy. The ankle presented the appearance of chronic "sprain" affecting the lateral ligament of the ankle joint. Active treatment along the same lines was continued with no improvement; in March 1965 he first complained of a feeling of numbness on the dorsum of the foot, and a patch of hypoesthesia was found. For the next two years he continued to have trouble but could play tennis if the ankle was tightly bandaged to prevent it "going over." By October 1968 he was no longer able to play tennis, ankle weakness had increased, and a slight evertor and dorsiflexor muscular weakness was found, with greatly increased tenderness over the common peroneal nerve at the fibular neck.

Operation was done on 2 November; there was clear evidence of entrapment. By 5 February 1969 muscular strength had recovered fully. He required no support and was able to play tennis normally. Though he still complained of numbness over the dorsum of the foot, no alteration of sensation could be found. By June 1969 he was symptom-free.

#### Discussion

The results of treatment by a simple and harmless operation are on the whole very satisfactory, and as with experience diagnosis improves they should become more so. As in most other cases of peripheral entrapment neuropathy, relief of pain is a very important result, but of equal importance is the relief of paresis, sometimes of long duration. However long the paresis has been present, it seems to resolve at about the same rate. Examination of large numbers of patients with knee injuries leaves a small percentage in whom no definite diagnosis presents; this seems to be particularly so when the flexed knees are

injured by forcible impact against a dashboard, a very common accident nowadays. In such cases the possibility should be considered that the pain may be caused by common peroneal entrapment after direct injury. Two patients in this series sustained such an injury; in one, repeated examination was carried out for two and a half years before a definite diagnosis could be made, but once this was done treatment brought complete relief and to date has removed her disability.

#### Aetiology

Part of the vulnerability of the common peroneal nerve at the neck of the fibula is its situation, as it lies deep only to skin and fascia and directly on bone. Nevertheless, probably the greater part is due to the changes in tension which occur under the sharp crescentic arch of the tendinous origin of peroneus longus (Kopell and Thompson, 1960, 1963).

The nerve may be affected by direct trauma from a blow or maintained external pressure, by fracture of the fibular neck, or from deep pressure (as from a tumour). Indirectly, it is affected by factors altering weight transmission, such as gross osteoarthritis of the knee joint or platform fracture of the tibia, but most often these indirect forces are more distant, frequently resulting from adduction/inversion injury to the foot and ankle. Such injuries may be severe, causing either fracture or dislocation, or more commonly a "sprained ankle." Occasionally, when the ankle swelling and local soreness have subsided, trouble may persist as a disabling state of chronic or recurrent sprain; an ankle which repeatedly "turns over" causing swelling in the region of the external malleolus and distal to it, with considerable pain. Attention is focused on this ankle weakness, with its supposed ligamentous laxity. In only a few cases is such laxity demonstrable; where it cannot be shown treatment tends to be unsuccessful. Such a condition may progress insidiously yet steadily to a complete "drop foot."

In a short paper on lateral popliteal nerve compression (Marwah, 1964) it was postulated that the main focus of compression was in a fibro-osseous canal formed by the thick fascia which overlies the peroneal nerve at the fibular neck. In the first patient, when only this fascia was divided, the condition recurred. It was not until a complete neurolysis was done, dividing the tendinous arch of origin of peroneus longus, that rapid and permanent relief was obtained.

## Clinical Picture

The results of entrapment may be both motor and sensory, the picture varying from virtual complete paralysis of all the muscles supplied (resulting in "drop foot") to no muscular abnormality whatever, though some degree of paresis is usually found. The commonest symptom is pain, which may be severe and disabling, and which is usually present. Less commonly paraesthesiae and numbness occur; these are less often nocturnal than in certain other peripheral entrapment neuropathies—for example, carpal-tunnel syndrome. Nocturnal cramp is common. Less frequently there is complaint of coldness below the knee and in the foot. Well-defined sensory impairment is less common than paresis, but sometimes there is partial or, rarely, complete anaesthesia over the sensory distribution of the nerve. Though the normal nerve at the neck of the fibula is not sensitive to palpation or to gentle percussion, commonly there is pronounced local tenderness over the nerve at the fibular neck in entrapment. Reflexes are normal, and there is seldom muscular wasting. The major symptoms may be summarized as follows: pain, paresis, paraesthesiae and numbness, and nocturnal cramp.

## Diagnosis

Severe nerve injuries, neurotmesis, and axonotmesis, involving complete interruption of all nerve transmission with consequent total paralysis and sensation loss, are distinguishable from entrapment neuropathy, where complete interruption never occurs. The lesion of entrapment and that of neurapraxia have, however, some points in common. Neurapraxia is a temporary interference with nerve transmission showing initially full effects of the exciting cause, and improving steadily to complete return of function. All three of these nerve injuries, but not peripheral entrapment neuropathies, may cause loss of tendon reflexes. The effects of entrapment are variable, intermittent, and capricious, either predominantly motor or sensory, which effects are seldom concomitantly severe. Though sometimes self-limiting, entrapment effects usually continue to be felt until their cause is removed. Probably entrapment effects are mainly due to pressure avascularity and hence anoxia in a localized segment of nerve (Kremer *et al.*, 1953). If recovery after decompression is incomplete, which does occur, the implication is that because of long-standing or unusually heavy pressure permanent change has occurred in the nerve fibre or its sheath (Semple and Cargill, 1969).

Diagnosis depends on the taking of a very careful and detailed history followed by thorough physical

examination, which must include a general examination. Muscle tests must be carried out clinically and by electromyography; by this means peripheral neuritis can be eliminated, particularly as in established peripheral neuritis there is alteration of tendon reflexes. Similarly, careful history-taking and clinical examination should eliminate conditions such as vascular insufficiency (which may closely simulate the effects of peroneal entrapment) and of disease of the central nervous system. The history is often characteristic and the clinical signs are few, so that, as in entrapment neuropathy elsewhere, initial diagnosis must be made on history alone.

A reliable clinical test which can be carried out quickly and easily is the injection of one of the prednisolone derivatives at the point of entrapment in the region of the tendinous arch of the peroneus longus. Because of the risk of a complete drop foot of some hours' duration, it is important not to inject local anaesthetic into this region. Not only will this prednisolone test relieve pain, sometimes for a few weeks, but in at least one patient there was an appreciable increase in muscular strength within a few minutes of the injection.

If only those muscles supplied by the common peroneal nerve are affected, and if the sensory alterations are within the supply of the nerve, probably the causative factor will be somewhere along the short course of the nerve to its termination by division into its two major branches.

In an appreciable number of patients there seems to be no definite reason for nerve entrapment to arise. In these patients diagnosis is more difficult, as it is in another group—namely, those who have sustained a distant indirect injury, perhaps initially not even considered a serious one. Typically this is regarded as a "sprain" of the ankle; it does not get better and continues to the common picture of persistent weakness and swelling, with a tendency for the ankle to "go over."

This series suggests that, though there may be a component of ligamentous injury to the ankle, the possibility of muscular insufficiency from peroneal nerve involvement should be considered. This nerve entrapment may be the cause of a great deal of persistent ankle disability. The relief of chronic and at times crippling disability following relatively trivial injury can be striking. Experience with peripheral entrapment neuropathy elsewhere—in particular, the carpal-tunnel syndrome—has been that relief of compression is followed by quick cessation of symptoms

and a rapid return to full function, and this has proved to be so in the present series of cases. Semple and Cargill (1969), however, observe that after operation full recovery may not occur in the more long-standing cases of carpal-tunnel syndrome. Hence there is little point in delaying decompression once a

diagnosis has been made at other sites of peripheral nerve entrapment.

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(The references may be seen in the original article.)

## FURTHER CONSIDERATION OF THE MINIMUM DOSE OF HISTALOG NECESSARY TO PROVOKE A MAXIMAL SECRETORY RESPONSE

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The purpose of the study was to determine the minimal dose of intramuscular Histalog necessary to evoke a maximal gastric acid response. A brief review of some of the reported side effects of Histalog was made. Analysis of previous studies led to the conclusion that the proper dose of Histalog was in the range of 1.5–2.0 mg/kg body weight. Some possible reasons for the discrepancy in dose recommendations are pointed out. Ten subjects were tested with intramuscularly administered alternate doses of 1.5 and 2.0 mg Histalog per kilogram body weight. The results were expressed in terms of maximal acid output per hour. There was no statistical difference in the results. It was concluded that the proper dose of intramuscularly administered Histalog for the augmented Histalog gastric analysis is 1.5 mg/kg.

Following the work of Kay, the concept of a maximum parietal cell response has become well established. The reproducibility of the test and its physiologic implications using histamine, Histalog, and gastrin or various derivatives of gastrin is universally accepted. The lack of uniformity in the terminology is unfortunate, but the many terms (such as maximal acid response, maximal acid output, peak  $\frac{1}{2}$  hr, etc.) do seem well understood by workers in the field and permit comparison of results.

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The opinions expressed herein are those of the authors and cannot be construed as reflecting the views of the Navy Department or of the naval service at large.

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In the case of gastrin and its derivatives, the unresolved problem would seem to be not one of dose, but of which form to use and by which route. Surprisingly, in the case of Histalog, the most significant source of disagreement involves the simple question of the minimal dose required to produce a maximal response. The American Gastroenterological Association, at its Chicago meeting in May 1966, recommended a Histalog dose of 1.5 mg/kg. Most studies support this recommendation, but serious doubt was raised by Laudano, who recommended 2.0 mg/kg, as did Clark and Englert, reversing their previous stand.

### Materials and Methods

#### Subjects

There were 12 subjects—all male and with an age range of 19–52 years. Efforts were made to select patients without gastric disease, particularly gastritis. Clinical assessment, and radiologic and gastroscopic studies, as considered appropriate, were utilized in eliminating patients with gastric disease. The grouping of subjects by final diagnosis was as follows: 3 were normal volunteers, 1 had hiatal hernia, 5 had dyspepsia without definite evidence of ulcer disease, and 1 had duodenal ulcer.

#### Drugs

Histalog was given as a single intramuscular injection in doses of 1.5 and 2.0 mg/kg. An intramuscular injection of 10 mg (1cc) of a parenteral form of chlorpheniramine was administered  $\frac{1}{2}$  hr prior to the injection of Histalog.

## Procedure

The procedure used was essentially that used routinely at this activity and consisted of the introduction of a radiopaque rubber Levin tube into the fasting stomach. The tip was placed, under fluoroscopic guidance, just distal to the most dependent portion of the stomach. Specimens were collected with the subject in the left lateral position, but with transient turning into the supine position once every 15 min. Constant machine suction was used with a vacuum of 30–35 cm of water and periodic automatic breaking of the vacuum. To ensure patency, air was injected down the tube approximately every 5 min. All specimens were collected at 15-min intervals, with the first 15-min specimen being discarded. Following the collection of a 1-hr basal specimen, Histalog was administered and the collection continued for 2 hr. After determination of volume and pH on each specimen, the concentration of acid was determined. An automatic titrimeter was utilized, and the specimen was titrated with 0.05 N sodium hydroxide to an end point of pH 7.4. The maximal acid output was calculated by adding the results of the four consecutive samples giving the highest value. None of the patients had been on anticholinergic agents prior to the testing procedures.

Initially, a group of 6 patients was tested with alternate Histalog doses of 1.5 and 2.0 mg/kg on successive days. This approach was then modified so that an interval of several days was allowed to elapse between each test.

## Results

### Tests Performed on Successive Days

All values of maximal acid outputs performed on successive days were close; however, a disturbing trend was noted: in all cases but one, the value for the second day of testing was less than the value obtained for the first day. This result was irrespective of the dose of Histalog used.

### Tests Performed with an Interval of 3–10 Days

Ten patients were tested with alternate doses of 1.5 and 2.0 mg/kg at the above intervals. Only one subject was tested at the 3-day interval; the usual interval was 7 days. Some of the original 6 individuals were retested; this included only the healthy volunteers. The values of the maximal acid outputs expressed in milliequivalents per hour are listed under subject designator and dose of Histalog in Table 1.

TABLE 1. MAXIMUM ACID OUTPUT AT TWO DIFFERENT HISTALOG DOSES

Patient	Acid output (mEq/hr)	
	1.5 mg/kg dose	2.0 mg/kg dose
Shi	31.0	25.1
Ken	38.0	41.6
Joh	46.0	46.5
How	45.1	41.9
Lyn	51.2	41.7
Ste	30.7	32.3
McC	36.2	38.6
Dav	29.1	26.8
Bur	22.3	23.2
Vig	22.9	15.8

*Statistical Analysis.* The values in Table 1 were analyzed statistically with the use of the Student t test. A comparison of the maximal acid outputs in response to the two doses of Histalog is as follows: (1) the 1.5 mg/kg dose produced a mean value of  $35.25 \pm 9.8$  mEq/hr, and (2) the 2.0 mg/kg dose produced a mean value of  $33.25 \pm 10$ . These differences were not statistically significant with a Student t test of  $p > 0.2$ .

## Comments

If, as suggested by Baron, the use of gastrin had made the other tests of maximal gastric function obsolete, there would have been little point of further work on the question of proper dose of Histalog in clinical work involving humans. The situations in the United Kingdom and the United States are quite different, however. Pentapeptide is now available on the open market in Great Britain, but not in the United States. On the other hand, Histalog is not readily available in the United Kingdom and, hence, is more expensive.

We feel that the validity of either test will continue, and that at this time the Histalog test is still the most widely used test of maximal gastric secretory function in the United States and will continue to be so for the immediate foreseeable future. Generally, as with any drug, the smallest dose giving the required response is the safest dose. Contrary to seemingly widespread belief that Histalog is free of the side effects produced by histamine, significant side effects do occur and seem to correlate with the dosage. Goldenberg *et al* report a significant incidence of tachycardia, headache, weakness, and mild flushing with the 2 mg/kg dose. Three of their patients had vaso-

motor collapse with loss of consciousness about 30 min after the injection. In 14 of their patients large amounts of blood were recovered, and in 10 of these the study was discontinued due to the extent of the bleeding. Our own experience with the 1.5 mg/kg dose preceded by antihistamine (and this is our routinely used test) is more benign. We do have occasional but never serious bleeding, and a moderate mottled flush is common. Generally the patient is unaware of the flush until it is called to his attention. Our patients have not complained of tachycardia or headache.

Awareness of the reports of bleeding after Histalog and of the report of Siegel *et al* relating to mucosal damage following histamine, and with the apparently lowered response on the second day of Histalog testing in our study, we considered the possibility of acute mucosal damage following Histalog. In those few patients in whom we carried out gastroscopy on the day following Histalog, we found generalized hyperemia and superficial damage to the mucosa. We were unable to draw conclusions from such a limited experience, however, and this possible phenomenon is now the subject of further study. Interestingly enough, the studies of Laudano were stated to have been carried out at intervals of 1, 2, and 3 days.

The presence of gastritis is known to be accompanied by a lower response to stimulation. This leads us to question the use of patients with gastritis as in 8 of

41 of the cases reported by Zaterka and Neves, and in 3 of the 12 subjects tested and reported by Clark and Englert.

The importance of proper fluoroscopic tube placement is now widely recognized, yet the often quoted study of Zaterka and Neves was performed without the benefit of fluoroscopy in all cases.

The response to intravenous administration of stimulants of gastric acid secretion is known to be greater than that resulting from the subcutaneous administration of the same drug dose and type. Some of the reports dealing with determination of Histalog dose utilize an intramuscular route, some a subcutaneous route, and others fail to specify the route used. We wonder if the variability of route used could partially account for the discrepancy in dose recommendations by different authors.

Analysis of previous studies and of the results from this study lead us to the conclusion that there is no statistical difference between the response of the acid secretion of the stomach of human subjects without gastric disease to intramuscularly administered Histalog doses of 1.5 and 2.0 mg/kg. We conclude that the proper intramuscular dose of Histalog for clinical and research purposes in human subjects is 1.5 mg/kg.

(The figure and references may be seen in the original article.)

Sixteen dental officers of the U.S. Navy completed the CASUALTY TREATMENT TRAINING COURSE conducted 18–22 May 1970 at the Naval Dental Clinic, Norfolk, Virginia. The course, under the supervision of the Bureau of Medicine and Surgery, is conducted throughout the Navy to develop in dental officers such skills in emergency casualty treatment as to make full use of their professional knowledge, thus enabling them to amplify the medical effort in time of major emergency. This is the second course to be conducted there this year. Similar courses are held at Bethesda, Maryland; Great Lakes, Illinois; and San Diego, California. Attending the course were: CDR F. C. Leiser, Jr., DC, USNR-R; CDR N. D. Large, DC, USNR-R; CDR R. W.

Gomer, DC, USN; LCDR N. C. Wilson, DC, USN; LCDR C. S. Peck, DC, USNR; LCDR G. G. Clendenin, DC, USNR-R; LCDR J. F. Koenigs, DC, USN; LT R. J. Ellenbecker, DC, USN; LT R. M. Barbe, DC, USNR; LT D. G. Cairns, DC, USNR; LT J. T. Mudler, DC, USNR; LT R. L. Curry, DC, USNR; LT T. P. Riordan, DC, USNR; LT I. R. Cioffi, DC, USNR; LT F. Romero, DC, USNR; and LT R. N. Taylor, DC, USN.

The Casualty Treatment Training Course was under the direction of CAPT W. B. Gregory, DC, USN, and CAPT C. F. Rau, DC, USN. RADM M. E. Simpson, DC, USN, is Commanding Officer of the Naval Dental Clinic, Norfolk. CAPT J. F. Link, DC, USN, is Executive Officer.



*To the Editor:* We read the excellent article about the Naval Support Activity Station Hospital, DaNang, March 1970, with great interest. The description of services available is quite comprehensive, with but one obvious (to us) omission; the optometry clinic and optical lab.

Shortly after the hospital was dedicated in early 1966 the first Navy optometrist to serve in a combat area arrived at DaNang to set up a spectacle fabrication unit and optometry clinic. Prior to that time patients were sent to Saigon or even Yokosuka for eye examinations and glasses. Until January, 1968, only one Navy optometrist was available for all personnel of the five branches of the Armed Services plus civilians in I Corps, the five northernmost provinces of Vietnam. One ophthalmologist at NSA, DaNang, and one on the USS Sanctuary and the USS Repose were kept busy with surgery and pathology the major part of the time.

Patients came from as far as the DMZ in the north and Chu Lai in the south, were examined within a short period of time, had fabricated two pair of glasses while they waited, and returned to the field. Examination capability reached 1,000 patients per month and spectacle fabrication rose to over 6,000 pair per month. Up to twelve hospital corpsmen (ophthalmic technicians) were assigned to the unit for the fabrication of spectacles and screening of patients.

The original unit was housed in one 40-foot quonset hut. On New Years Day of 1968 the lab was moved to a neighboring building in order to make room for a second optometrist.

With an estimated 30% of combat troops wearing glasses, our mission of aiding our fighting men to see the enemy should be considered a vital service.

Respectfully,

L. M. Roach, CDR MSC USN  
MCRD, San Diego

J. F. Johnston, CDR MSC USN  
Naval Hospital, San Diego

R. L. Newell, LCDR MSC USN  
MCRD, San Diego

J. F. Socks, LT MSC USNR  
Naval Hospital, San Diego

*We heartily agree. NSA Hospital, DaNang, as a component of the Naval Support Activity, DaNang, was awarded the Navy Unit Commendation on two occasions; the first for services from 15 October 1965 — 15 August 1966, and the second award for services from 16 August 1966 to 15 May 1969. The hospital was phased out on 15 May 1970, and the physical structure was turned over to the U.S. Army.*

# NOTES AND ANNOUNCEMENTS

## NAVAL DENTAL CORPS CONTINUING EDUCATION PROGRAM

The Continuing Education Courses conducted at the Naval Dental School, National Naval Medical Center, Bethesda, Maryland, and the Naval Dental

Center, San Diego, California, are scheduled during Fiscal Year 1971 as follows:

Naval Dental School, Bethesda, Maryland:

<i>Course</i>	<i>Dates</i>
Preventive Dentistry	14-18 September 1970
Oral Roentgenology	28 September-2 October 1970
Occlusion	19-23 October 1970
Oral Surgery	16-20 November 1970
Oral Pathology	11-15 January 1971
Endodontics	25-29 January 1971
Fixed Partial Dentures	1-5 March 1971
Removable Partial Dentures	15-19 March 1971
Complete Dentures	5-9 April 1971
Operative Dentistry	19-23 April 1971
*Maxillofacial Prosthetics	26-30 April 1971
Periodontics	3-7 May 1971
**Management Seminar	10-14 May 1971

\*Course limited to active duty prosthodontists of the Navy, Army, Air Force, Veterans Administration, and Public Health Services.

\*\*Enrollment is limited to 20 Naval Dental Corps officers on active duty in the grades of Commander and Captain.

Quotas have been assigned to District and Staff dental officers for career dental officers, and Reserve dental officers on active duty, on a space available basis. District Commandants have likewise been assigned quotas for eligible inactive Naval Reserve Dental officers.

For courses at the Naval Dental School, applications from career officers and Reserve officers on active duty are to be submitted via the chain of com-

mand and in accordance with current directives, to the Chief, Bureau of Medicine and Surgery (Code 611), Navy Department, Washington, D.C. 20390, using the format shown in MANMED article 6-130. Active status Naval Reserve dental officers on inactive duty will apply to their District Commandant via the Director of Dental Activities or the District Dental Officer, as applicable.

Naval Dental Center, San Diego, California.

<i>Course</i>	<i>Dates</i>
Removable Partial Design	14-16 September 1970
Fixed Partial Dentures	5-7 October 1970
Oral Diagnosis	26-28 October 1970
Operative Dentistry	16-18 November 1970
Occlusion	7-9 December 1970
Endodontics	11-13 January 1971
Complete Dentures	1-3 February 1971
Oral Surgery	8-10 March 1971
Preventive Dentistry	5-7 April 1971
Periodontics (Basic)	17-19 May 1971

For courses at the Naval Dental Center, San Diego, California, career dental officers and Reserve dental officers on active duty should submit their ap-

plications via the chain of command and in accordance with current directives to the Commandant, Eleventh Naval District (Code 37), San Diego, Calif-

fornia 92132, using the format contained in MANMED article 6-130. Active status Naval Reserve dental officers on inactive duty will apply to the Commandant of the district in which they reside.

Application should be submitted so as to be received at least one month prior to the convening date of the course. Officers will be notified regarding the action taken on their requests. Those approved will be nominated for TAD, authorization orders, or active duty for training, as appropriate. ☺

### AEROSPACE MEDICINE

The Bureau of Medicine and Surgery has approval to nominate approximately 50 former Flight Surgeons who are occupying hospital, clinical or training billets for duty involving flying (DIFOT) status. The program will be divided into three categories.

I. One former Flight Surgeon assigned to each of several large naval hospitals near a naval aviation activity in a specialty related to Aerospace Medicine may be placed on duty involving flying. He will be the advisor to the commanding officer on aerospace medical matters, staff consultant for aviation designated patients, and will conduct aviation physical examinations when required. The DIFOT designation remains at the hospital and does not move with the incumbent.

II. Each year a limited number of carefully chosen career oriented Flight Surgeons who have been selected for clinical residency training will be nominated for duty involving flying. They will assume no aerospace duties other than those required to fulfill their minimum flight time requirements. These residents will be considered as members of aerospace medicine and upon completion of their training will be assigned by that organization. Assignments will be projected toward career patterns including the practice of a chosen specialty at an air station hospital, followed by a tour of duty in a major hospital. As the need arises, a tour of sea duty would become a likely possibility, as Senior Medical Officer of a carrier. Subsequent duty assignment at an air station hospital as executive officer or commanding officer can be envisioned. As leadership and administration capabilities become apparent, certain individuals would enter into competition for elevation to major commands. No additional duty obligation will be incurred by accepting the DIFOT orders.

III. Up to five Flight Surgeons each year will be placed in hospitals near major naval aviation activities for a one-year clinical refresher in a duty involving flying status. These Flight Surgeons, preferably in the grade of LCDR or CDR, will assume no aviation

medicine duties except to fulfill their minimum flight time requirements. They will establish their own curriculums with the assistance and approval of a senior hospital staff officer. Upon completion of the refresher training, they will normally be assigned to the nearby aviation activity, avoiding a household move.

Flight Surgeons and former Flight Surgeons who are interested in any of the three parts of this program should make their desires known by letter to Captain R. C. McDonough, MC, USN Bureau of Medicine and Surgery (Code 51), Navy Department, Washington, D.C. 20390. Further information will be disseminated as appropriate. ☺

### SURGEON GENERAL'S CONFERENCE

The biennial conference of the Surgeon General with members of the Navy Medical Department was held 20-22 May. More than 100 senior Medical Department officers attended the 3-day sessions, held at the Naval School for Health Care Administration, NNMC, Bethesda.

The purposes of the conference—one of a series held since the post World War II years—were to improve communications, to discuss and clarify medical policies and to achieve higher levels of medical care. These objectives, and others, were attained, with gratifying results.

Principal guest speakers at the conference included the Honorable John H. Chafee, SECNAV; ADM B. A. Clarey, Vice Chief of Naval Operations; GEN L. F. Chapman, Commandant of the Marine Corps and, the Honorable L. M. Rousselot, Deputy Assistant Secretary of Defense (Health Affairs). Professional papers were presented by selected representatives of BUMED and Field activities relating to the more common problems of health care delivery. Each session was designed for the free exchange of questions, answers, opinions and comments between the moderators and those in attendance.

Two former Surgeons General of the Navy: RADM C. A. Swanson, MC, Retired and RADM B. W. Hogan, MC, Retired, and many retired, distinguished Navy Medical Department officers were in attendance. Among these were VADM Joel T. Boone, MC; RADM John Harper, MC; RADM Dwight Dickenson, Jr., MC, and RADM Walter Welham, MC. ☺

### TRAINING COURSE—AUDIOMETRIC TECHNIQUES

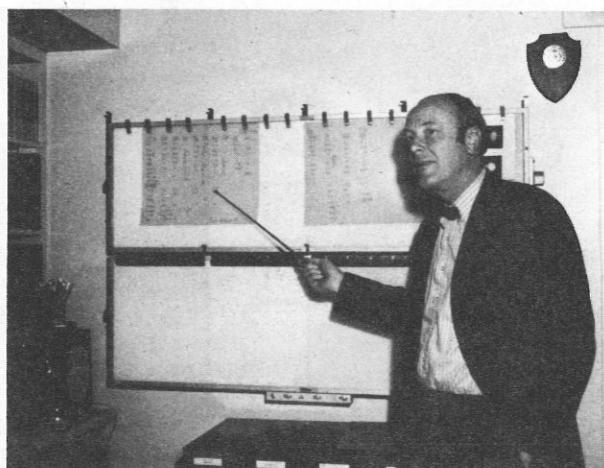
The Acoustics Laboratory, Naval Aerospace Medical Research Laboratory of the Naval Aerospace

Medical Institute, Pensacola, has scheduled four one-week courses in audiometric techniques during FY 1971. The convening dates for the first two sessions are 27 July and 12 October. The course is designed to train corpsmen in audiometric techniques in support of the Hearing Conservation Program. Emphasis is placed on supervised practice in the operation of manual and automatic recording audiometers. Students are also given instruction on earplug fitting procedures, record keeping, audiogram interpretation, audiometer maintenance procedures, and noise exposure analyses.

A letter outlining the details for the course will be sent by NAMI to those activities with group screening audiometers so that technicians may be selected for this specialized training. It is anticipated that the invitation will be extended to other activities after the initial priorities are met. ■

#### DR. CHALMERS APPOINTED DIRECTOR OF THE CLINICAL CENTER—NIH

Recently, the Clinical Center at the National Institutes of Health had appointed as its new director Dr. Thomas Chalmers. Dr. Chalmers has been known to the Navy as an outstanding consultant in gastroenterology and liver diseases to the Surgeon General and to the Gastroenterology Clinic and Research Branch at the Naval Hospital, NNMC, Bethesda, Md.



According to CAPT William M. Lukash, Chief of the Gastroenterology Clinic and Research Branch, Dr. Chalmers has been an invaluable addition to the consultant staff at the Naval Hospital. His depth of interest in research and his tremendous experience in clinical medicine lend much credence to his belief that adequate patient care is best derived from scientifically based concepts and controlled clinical studies.

Dr. Lukash stated that Dr. Chalmers is interested in a closer liaison between the naval hospital and the Center at NIH. With such a combination of clinical and research facilities, significant medical progress in the 70's is anticipated. ■

#### FIXED PARTIAL DENTURE PROSTHODONTICS COURSE

The Naval Dental School announces a new correspondence course for dental officers, *Fixed Partial Denture Prosthodontics*, NavPers 10410-A, based on the text *Modern Practice in Crown and Bridge Prosthodontics*, ed. 2, by J. F. Johnston, R. W. Phillips, and R. W. Dykema.

The course initiates the use of a self-scoring answer sheet, which will enable the student to know immediately whether he has answered the questions correctly. When answers are incorrect, the student is referred to pages in the text for further study before answering other questions.

This new type of answer sheet was adopted because studies have shown that material is learned more readily and retained longer when immediate feedback is employed.

The course is divided into four assignments. The first assignment includes diagnosis and treatment planning, instrumentation, tooth reduction, and types of crowns and retainers. The second considers laboratory procedures and pontic design. The third includes procedures for soldering, fitting, and cementing crowns and fixed partial dentures and for applying porcelain and resin veneers. The final assignment discusses special factors in crown and fixed partial denture construction.

Officers who received credit for the previous course, NavPers 10410, may enroll in the new course for additional credit.—PAO, Naval Dental School. ■

#### ENDODONTICS CORRESPONDENCE COURSE

The Naval Dental School offers a newly revised correspondence course for dental officers, *Endodontics*, NavPers 10407-B, which is based upon the text *Endodontics*, NavPers 10782-B. Both publications have been extensively rewritten to include advanced concepts and techniques in endodontic treatment. A set of slides is included in the course materials to help illustrate the discussion in the text.

This is the second course to utilize self-scoring answer sheets, which reveal immediately to the student whether he has selected the correct answer to an

item and refer him to a page reference in the text if his answer is incorrect.

The course consists of four assignments: The first covers pulpal and periapical pathosis. The second includes diagnostic procedures, preservation of the pulp, evaluation of cases for endodontic treatment, and microbiological aspects. Assignment three considers nonsurgical endodontic treatment and preparing the root canal for filling. The fourth and final assignment covers filling the root canal, surgical endodontic treatment, and bleaching. Officers who received credit for the previous course, NavPers 10407-A, may enroll in the new course for additional credit. Eight retirement points will be given upon completion of the course. Application should be made to: Commanding Officer (Code E43), Naval Dental School, National Naval Medical Center, Bethesda, Maryland 20014. ☐

#### SOMOS MEETING

The 12th Annual Society of Military Orthopedic Surgeons' Conference will be held at the U.S. Military Academy, West Point, N.Y., September 14-16, 1970. Chairman of the Conference is COL Howard G. Abbott, MC, Chief, Professional Services, U.S. Army Hospital, West Point, N.Y. 10996. Autovon 552-1450—extension 3101 or 4549. ☐

#### CURRENT CONCEPTS IN MEDICINE COURSE

The Department of Medicine of the Naval Hospital, National Naval Medical Center, Bethesda, Md. is conducting a short course in general internal medicine entitled "Current Concepts in Medicine" to be held on 17 and 18 September, 1970. A similar course was held last year. The course is organized as a series of short presentations and panel discussions on topics of current interest. Registration is free and the course is open to all interested military and civilian physicians. ☐

#### SOCIETY OF MILITARY OPHTHALMOLOGISTS' MEETING

The 20th Annual Meeting of the Society of Military Ophthalmologists will be held on Thursday, October 8, 1970, in area B-1 of the Stardust Hotel and Casino, Las Vegas, Nevada. The Society meeting, which is held in conjunction with the annual meeting of the American Academy of Ophthalmology and Otolaryngology, will convene at 6 p.m. and will be devoted to a scientific program, business meeting, and social hour. All active duty, reserve and retired

ophthalmologists are invited and encouraged to attend. ☐

#### FOURTEENTH ANNUAL SEMINAR ON PROPHYLAXIS OF STREPTOCOCCAL INFECTIONS IN THE ARMED FORCES

The Fourteenth Annual Seminar for the Prevention of Streptococcal and Staphylococcal Infections sponsored by the Armed Forces Epidemiological Board, Committee on Prophylaxis Against Streptococcal Infections, Commission on Streptococcal and Staphylococcal Diseases will be held at Lowry Air Force Base, Denver, Colorado 80230, on Monday and Tuesday, 28-29 September 1970.

Activities desiring to send representatives to this Seminar should submit letter request to BUMED, Attention Code 316, in accordance with SECNAV Instruction 4651.15 series as soon as possible. ☐

#### RADM WELHAM NAMED EXECUTIVE DIRECTOR OF MILITARY SURGEONS

RADM Walter Welham, MC, USN (Ret), has been named Executive Director of the Association of Military Surgeons of the United States, it was announced by Association President VADM George M. Davis, MC, USN, the Surgeon General of the Navy.



A graduate of the University of Pennsylvania and the Temple University Medical School, Admiral Welham has a long and distinguished career in the Medical Corps of the U.S. Navy specializing in submarine medicine.

He has served as the Force Medical Officer on the Staff of the Pacific Submarine Force Commander at Pearl Harbor, and during World War II served for a short time as the medical officer aboard the USS BOISE. RADM Welham was also Force Medical Officer on the Staff of the Atlantic Submarine Force Commander at New London, Connecticut.

As Senior Medical Officer at the U.S. Naval Academy from 1959 to 1963, he also served with the Academic Board as a member of the Admissions Board and Head of the Physical Qualifications Board as a member of the Naval Academy Athletic Association Board of Control.

Prior to reporting to the Commander-in-Chief, U.S. Atlantic Fleet, he served as the Assistant Chief

of the Bureau of Medicine and Surgery for Research and Military Medical Specialties.

Admiral Welham has also served as the Fleet Medical Officer on the Staff of the Commander-in-Chief, U.S. Pacific Fleet, with additional duty as the Medical Officer of the Joint Staff, Commander-in-Chief, Pacific.

Advanced to his present rank in 1963, his decorations include the American Defense Medal; campaign medals for the Asiatic-Pacific Theatre with campaign star and the European-Mediterranean Theatre; the World War II Victory Medal; the National Defense Medal and the Legion of Merit.

The Association of Military Surgeons, which Admiral Welham will now direct, was established in 1891 and chartered by Congress in 1903. Commonly referred to as "The Medical Society of the Federal Services," its members include thousands of medical and health care officers of the Armed Forces, the Public Health Service and the Veterans Administration. ☰

#### MEDICAL-SURGICAL DINNERS, NAVAL HOSPITAL BOSTON

For the past three years the resident staff of the Naval Hospital Boston has been conducting evening dinner meetings on a regular basis inviting speakers of national prominence. Initially these meetings involved only the surgical staff. However, because of the interest shown in the meetings by the general house staff, the meetings later became the combined effort of the medical and surgical resident staff.

Topics are chosen that offer an opportunity for an illuminating dialogue between the surgical and medical discussants. The evening usually begins with a social hour and dinner in the Officers' Club. This is then followed by the speaker portion of the program. The entire hospital staff is invited as well as the local civilian and military medical community including reservists and former medical officers who have served at the hospital.

A recent meeting held 16 April 1970 was arranged by LCDR Frank E. Ehrlich, Senior Surgical Resident, and featured Dr. Richard C. Lillehei. The topic for the evening was "Current Concepts of Shock". Dr. Lillehei is widely known for his basic research and clinical investigation into the causes, prevention and treatment of shock.

Other guest speakers have included: Dr. Joseph E. Murray, Dr. Dwight E. Harken, Dr. Bentley P. Col-

cock, Dr. William V. McDermott, Dr. Frank Iber, Dr. Robert Kistner, Dr. Joseph Messer, Dr. Harry M. Spiro, Dr. Herbert A. Selenkow and Dr. Hilton A. Salhanick. (Photo on page 48.) ☰

#### BROOKLYN SURGICAL SOCIETY NAVAL HOSPITAL, ST. ALBANS

The Brooklyn Surgical Society joined the staff of the Naval Hospital, St. Albans, New York, for their Forty-Fourth Annual Joint Dinner Meeting on 5 February 1970. Dr. Tom Shires, Professor and Chairman, Department of Surgery, Southwestern Medical School, Dallas, spoke on "Current Status of the Treatment of Shock". Approximately 180 people attended the meeting, including the Surgeon General's representative, RADM Felix P. Ballenger, Commanding Officer of the National Naval Medical Center, Bethesda, Maryland.

On 2 April 1970 the staff of the Naval Hospital was hosted, in turn, by the Brooklyn Surgical Society at a similar dinner meeting held at State University of New York, Downstate Medical Center. The featured speaker was Dr. Edmund D. Pellegrino, Director, Health Services, State University of New York at



Dr. Richard C. Lillehei, Professor of Surgery, University of Minnesota Medical Center, Minneapolis (left) checks the slide projector with CAPT Scott G. Kramer, MC, USN, Chief of Surgery at Naval Hospital Boston in Chelsea, Mass.

Stony Brook, whose provocative topic was "Medical Education in the Seventies".

The Brooklyn Surgical Society is one of the oldest in the country, having been formed in 1887. The reciprocal professional meetings between this group and the Naval Hospital have continued since 1924, with St. Albans hosting the winter meetings and the Brooklyn Surgical Society hosting the spring meetings. ♦♦♦

#### NAVAL DENTAL OFFICER HONORED BY JAPANESE DENTAL SOCIETY

On behalf of the Kanagawa Dental Society, Doctor Y. Tani, a member of the Board of Directors and a practicing Yokosuka dentist presented a certificate of appreciation together with the association's pennant to Captain K. L. Longeway, Commanding Officer of the U.S. Naval Dental Clinic, Yokosuka for his outstanding cooperation in promoting oral hygiene programs for the Japanese citizens and for his profes-

sional assistance in the advancement of dentistry among Japanese dentists.

This was the first time in the history of the dental organization that this honor was bestowed on an American dentist. The Kanagawa Dental Association, under the Presidency of Doctor M. Katoh of Yokohama, is composed of 1650 practicing dentists in the entire Kanagawa Prefecture. Doctor T. Sakuma, President of the Yokosuka Chapter and Doctor S. Kondoh, President of the Yokohama Chapter, have worked closely with Captain Longeway during Children's Dental Health Week in caring for various Japanese orphans. ♦♦♦

#### OPERATION EXOTIC DANCER

CAPT J. H. Stover, Jr., MC, Director, Marine Corps Medical Support Division, participated as BUMED observer/casualty evacuation control officer in the recent (17-22 May) Operation EXOTIC DANCER #3. The operation was jointly sponsored

and involved Fleet, Army and Marine Corps Units, principally off the Carolina Coast. Combined units involving Marine Corps Helicopter Assault Team and the 82D Airborne Division, made simulated landings to determine effectiveness of amphibious assault technics. CAPT Stover headed a team of seven observers, whose function was to witness casualty control ashore and afloat. Concomitant with the landing exercises, two mobile surgical teams participated in testing the feasibility of utilizing an LKA as a surgical-team platform. ☐

#### REPOSE TO SUPPORT NH, LONG BEACH

USS REPOSE, after a 3-year deployment in SEASIA, will be refitted and manned for support to the Naval Hospital, Long Beach, Calif. The large number of active duty and retired personnel in the Long Beach area has overtaxed existing facilities to the extent that more medical support is needed. REPOSE is expected to be in full operation by 15 October. ☐

#### ERRATUM

The May 1970 issue stated that CAPT John T. Smith, MC, USN, Retired, in serving 40 years on continuous active duty, held the record among those now living, except for VADM G. M. Calver, MC, USN, Retired (53 years). We regret that we overlooked CAPT Leslie B. Marshall, MC, USN, Retired, who served with great distinction on continuous active duty from May 1917 to 1 July 1959—over 42 years. ☐

#### AMERICAN BOARD CERTIFICATIONS

##### *American Academy of Pediatrics*

CDR W. M. Bason, MC USN

##### *American Board of Anesthesiology*

CAPT R. L. Fruin, MC USN  
CDR D. R. Davis, II, MC USN  
LCDR A. Barone, MC USN  
LCDR A. A. Birch, MC USN  
LCDR B. C. Crafts, MC USN  
LCDR C. F. J. Maas, MC USN  
LCDR M. Z. Qureshi, MC USNR  
LCDR R. C. Waterbury, MC USN  
LT F. C. Helm, MC USNR  
LT A. E. Yahn, III, MC USNR

##### *American Board of Internal Medicine*

CDR V. L. Stotka, MC USN  
CDR G. J. Weir, Jr., MC USN  
LCDR M. E. Bohan, MC USN  
LCDR F. H. Corcoran, MC USN  
LCDR O. E. Edwards, MC USN  
LCDR C. S. Eytel, MC USN  
LCDR L. G. Hunsicker, MC USN  
LCDR R. B. Johnson, MC USN  
LCDR J. W. Sokolowski, MC USN  
LCDR J. D. Todino, MC USN  
LCDR J. D. Wallin, MC USN

##### *American Board of Neurology*

LCDR J. F. Sassin, MC USNR

##### *American Board of OB/GYN*

LCDR F. N. Boensch, MC USN

##### *American Board of Orthopedic Surgery*

CDR P. E. Biron, MC USN  
CDR J. C. P. Collier, Jr., MC USN  
CDR P. D. Cooper, Jr., MC USN  
CDR G. A. VanDeWyngaerdem, MC USN  
LCDR S. E. Donahoo, MC USN  
LCDR J. N. Hall, MC USN  
LCDR H. A. Westervelt, MC USN

##### *American Board of Otolaryngology*

LCDR R. S. Egan, MC USNR  
LCDR W. M. Gatti, MC USNR

##### *American Board of Pathology*

LT R. A. McLaughlin, MC USNR

##### *American Board of Pediatrics*

CDR J. I. Lynch, Jr., MC USN  
LCDR R. J. Larese, MC USN  
LCDR A. R. Pearson, MC USNR  
LCDR R. R. Skoglund, MC USN

##### *American Board of Plastic Surgery*

CDR G. W. Anastasi, MC USN  
CDR W. C. Dempsey, MC USN

##### *American Board of Preventive Medicine*

CAPT R. H. Tabor, MC USN

##### *American Board of Preventive Medicine in the specialty of Aerospace Medicine*

CAPT P. C. Gregg, MC USN

CDR D. R. Hauler, MC USN  
CDR W. W. Simmons, MC USN  
CDR T. J. Trumble, MC USN

*American Board of Preventive Medicine in the specialty of Occupational Medicine*

CDR P. G. Linaweaver, Jr., MC USN

*American Board of Psychiatry*

LCDR D. F. Duff, MC USN  
LCDR J. H. Miller, Jr., MC USN

*American Board of Radiology*

CDR J. F. Hiehle, MC USN  
LCDR F. D. Hirsch, MC USNR  
LT D. R. Boyse, MC USNR

*American Board of Surgery*

CDR C. L. Brodhead, Jr., MC USN  
CDR D. R. James, MC USN  
CDR C. F. Kellett, MC USN

CDR M. S. Kodsi, MC USNR  
CDR P. M. McGuigan, MC USN  
LCDR R. E. Carr, MC USN  
LCDR W. C. Johnson, MC USN  
LCDR S. F. Konigsberg, MC USNR  
LCDR J. G. Luehrs, MC USN  
LCDR W. J. Mattson, Jr., MC USNR

*American Board of Thoracic Surgery*

CAPT J. S. Maughon, MC USN  
CDR W. E. Beasley, III, MC USN  
CDR J. J. McHale, Jr., MC USN

*American Board of Urology*

CDR S. R. Julian, MC USN  
LCDR R. O. Davies, Jr., MC USN  
LCDR F. J. Frenzilli, MC USN  
LCDR B. B. Schwartz, MC USN

*American Society for Gastrointestinal Endoscopy*

CDR E. L. Burke, MC USN

## IN MEMORIAM

John Howard Cheffey was born in Smithfield, Ohio, on October 17, 1916, son of Windsor H. and Zana M. (Galbraith) Cheffey, both now deceased. He attended the University of Pittsburgh (Pennsylvania), from which he received the degree of Bachelor of Science in 1938. While there, he was a member of the Reserve Officers Training Corps Unit and upon graduation was commissioned Second Lieutenant in the Coast Artillery Corps, U.S. Army Reserve. He continued duty in the U.S. Army Reserve, serving as Second Lieutenant in the Medical Service Corps. In 1942 he received the degree of Doctor of Medicine from Jefferson Medical College, Philadelphia, Pa., and on June 15 of that year was commissioned Acting Assistant Surgeon, with the rank of Lieutenant (junior grade), in the U.S. Navy. He subsequently advanced in rank to that of Rear Admiral, on August 1, 1968.

After receiving his commission in 1942, he interned at the Norfolk Naval Hospital, Portsmouth, Va., until June 1943, remaining on the Staff there until August of that year. He was next assigned as Medical Officer at the Naval Construction Training Center, Camp Peary, Williamsburg, Va., and in December 1943 reported for duty in connection with

the conversion of the USS GENERAL H. W. BUTNER (AP-113) at the Maryland Dry Dock Company, Baltimore. He joined that transport as Junior Medical Officer upon her commissioning, January 11, 1944. That vessel supported wartime operations by transporting troops to and from the European and Pacific War areas.

Detached from the H. W. BUTNER in October 1945, he served as a surgical resident at the Naval Hospital, Bainbridge, Maryland, and in April 1946 was assigned to the Staff at the Naval Hospital, Portsmouth, Va. He was a Resident in Orthopedic Surgery, at the Naval Hospital, Chelsea, Mass., from September 1946 to January 1948, after which he received further training in Children's Orthopedics at the Alfred I. DuPont Institute in Wilmington, Delaware. In January 1949 he joined the Staff at the Naval Hospital, Bethesda, Md., and in July 1950 became Officer in Charge of "E" Company, FIRST Medical Battalion FIRST Marine Division, Fleet Marine Force. He was awarded the Navy Commendation Medal with Combat "V," for "excellent service . . . while serving with a Marine medical battalion during operations against the enemy in Korea from January 1, to June 9, 1951. . . ." He was also entitled



to the Ribbon for, and a facsimile of the Presidential Unit Citation awarded the FIRST Marine Aircraft Wing, Reinforced.

In June 1951 he reported as Chief of Orthopedic Surgery at the Naval Hospital, Key West, Fla., and in November 1953 transferred to the Naval Hospital, National Naval Medical Center, Bethesda, Md., where he served as Assistant Chief and Chief of Orthopedics until March 1956. Following an assignment, which extended to July 1958, as Chief of Orthopedic Service at the U.S. Naval Hospital, Yokosuka, Japan, he returned to the Naval Hospital, National Naval Medical Center, Bethesda, where he assumed similar duty. Between July 1964 and August 1966 he served as Assistant Chief of the Bureau of Medicine and Surgery for Personnel Control and Planning, Navy Department, Washington, D.C., interspersed with service from January 1965 to January 1966 as a Member of the Secretary of the Navy's Task Force on Personnel Retention, Navy Department. As such, he was primarily concerned with medical care in connection with habitability afloat and living conditions ashore. In August 1966 he became Assistant for Personnel to the Deputy Assistant

Secretary of Defense (Health and Medical), Washington, D.C., and in that capacity also worked with the Administration of the Armed Forces Physicians Appointment and Residency Consideration Program (Berry Plan). He was subsequently awarded the Legion of Merit and cited as follows:

"For exceptionally meritorious service from July 1964 to July 1967 while serving successively in the Bureau of Medicine and Surgery, on the Secretary of the Navy's Retention Task Force, and in the Office of the Deputy Assistant Secretary of Defense (Health and Medical). In all three of these assignments, CAPT Cheffey demonstrated exceptional dedication, sound judgment, and a thorough knowledge of the naval service, all of which served to attest his performance of duty as being truly outstanding in every respect. In addition to his significant contribution toward providing policies and economies during the period of Medical Department build-up for the Vietnam conflict, he has contributed greatly to the complex and vastly important deliberations and reports of the Secretary of the Navy's Retention Task Force, and has been of inestimable value in the formulation and implementation of personnel policies in the Office of the Deputy Assistant Secretary of Defense (Health and Medical). . . ."

In August 1967 RADM Cheffey assumed command of the Naval Hospital, Newport, R.I. and in February 1969 he became Commanding Officer of the Naval Hospital, Great Lakes, Ill., with additional duty as District Medical Officer of the Ninth Naval District and Commanding Officer of the Naval Hospital Corps School, Great Lakes.

In addition to the Legion of Merit, the Navy Commendation Medal with Combat "V," and the Presidential Unit Citation Ribbon, RADM Cheffey was entitled to the American Campaign Medal; European-African-Middle Eastern Campaign Medal; Asiatic/Pacific Campaign Medal; World War II Victory Medal; National Defense Service Medal with bronze star; Korean Service Medal and the United Nations Service Medal. He was also awarded the Korean Presidential Unit Citation Badge.

On May 17, RADM Cheffey suffered a sudden left internal carotid artery occlusion and died in his quarters at the Great Lakes Naval Base. Following graveside services on May 22, he was interred at Arlington National Cemetery in Arlington, Va. The following officers served as Honorary Pallbearers: VADM G. M. Davis, MC, USN, Surgeon General; VADM R. B. Brown, MC, USN, Ret., former Surgeon General; RADM J. W. Albrittain, MC, USN, Deputy Surgeon General; RADM F. T. Norris,

MC, USN; RADM H. S. Etter, MC, USN; RADM R. O. Canada, MC, USN, Ret.; RADM R. J. Pearson, MC, USN; and RADM R. E. Faucett, MC, USN.

Dr. Cheffey was a member of the American Medical Association and a Fellow, American Academy of Orthopedic Surgeons. In 1952 he was certified as an Orthopedic Surgeon by the American Board of Orthopedic Surgery. He is survived by his wife, the former Ruby E. Marshall of Danville, Va.

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Dr. Howard T. Karsner died on May 8, 1970 in Washington, D.C. at the age of 91.

Born in Philadelphia, Pennsylvania to the family tradition of medical practice January 6, 1879, Dr. Howard T. Karsner was so surrounded by physicians in his own family that he could not with grace have chosen a different calling. His father and grandfather, two uncles, and a granduncle were practicing physicians. He graduated from the University of Pennsylvania Medical School in 1903, and began his career in pathology in 1908 when he became a demonstrator at the University of Pennsylvania Medical School following internship. In 1911 he went to Harvard Medical School as assistant professor of pathology and in 1914 became Professor of Pathology at Western Reserve University.

Earlier, as his career was forming, he came into a special heritage, the influence of a long line of medical celebrities: Simon Flexner, Abraham Flexner, and Allen J. Smith, among others at the University of Pennsylvania Medical School; William T. Councilman, Frank B. Mallory, Otto Folin, Theobald Smith, and Joseph H. Pratt at Harvard Medical School; Ghon, Stoerck, Erdheim and others during two sojourns in Vienna and Berlin in 1906-07 and 1910. Rudolph Kraus inspired him to work in immunology, and the result was his textbook with E. E. Ecker as junior author, *The Principles of Immunology*. Sir Charles Martin, Sir Almouth Wright, Sir John Parkinson, Leonard Colebrook, and Matthew J. Stewart were special influences during his studies in London in 1922 and subsequently.

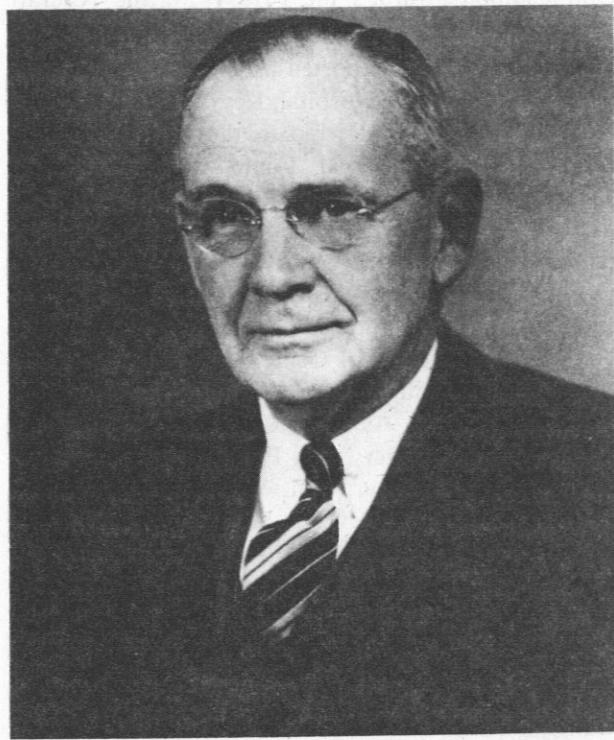
Doctor Karsner's tenure at Western Reserve University from 1914 to 1949 left the stamp of his intellect, ideals and personality on his students and associates to a degree unique in our time in North America. He had great skill as a teacher, and devised an approach by way of experimental methods long before others in the country followed his example. Concurrent with his teaching was his career as an active pathologist. He was founder and director of the Institute of Pathology at Western Reserve from its open-

ing in 1929 until 1949; the Institute had no counterpart in American medical schools at that time.

After nearly thirty-five years at Western Reserve, and just before becoming Professor Emeritus in Pathology, he resigned in 1949 to accept appointment as Research Advisor to the Surgeon General of the United States Navy and served in that position until 1962.

While serving in the Bureau of Medicine and Surgery, Doctor Karsner was instrumental in establishing the Committee on Naval Medical Research of the National Research Council. Also aided by his influence, the Armed Forces Institute of Pathology was founded. The establishment of the Naval Toxicology Unit was aided by Doctor Karsner, as was that of the Naval Medical Neuropsychiatric Research Unit and the Clinical Investigation Center at the Naval Hospital Oakland.

Interested in the many diversified programs of naval medical research, Doctor Karsner stimulated and promoted studies on the problems of enclosed environments such as submarines and was interested in the problem of high pressure oxygen toxicity and nitrogen narcosis. Aviation medicine also attracted his attention, resulting in his promotion of studies on physiological data in acceleration stress. The development of the Navy's program on clinical evaluation of preserved blood at the Naval Hospital Chelsea was of interest to him.



His contributions to the scientific field include research in Hodgkin's disease, anaphylactic shock, embolism, thrombosis, and infarction, toxic effects of oxygen concentrations, and toxic nephroses. As early as 1913 he was concerned with the origin of immune-serum necrosis of the liver. Later his investigations included cardiac pathology, especially calcific aortic valve disease, "inflammation of arteries," gynecomastia, carcinoma of the large intestine, hepatic cirrhosis, and hormonally active ovarian tumors.

His many publications include contributions in the field of immunology, experimental toxicology and anatomic pathology. In 1950 he prepared "Tumors of the Adrenal," one of the fascicles of the *Atlas of Tumor Pathology* published by the Armed Forces Institute of Pathology. His best known work is the text, *Human Pathology*, of which there are eight editions.

Doctor Karsner's acumen and standing in science are indicated by his membership in many societies and organizations, the important offices he has held, and the honors which he received. He was a member of the American Medical Association; Academy of Medicine of Cleveland (Honorary); Ohio State Medical Society; Association of American Physicians; American Association of Pathologists and Bacteriologists, of which he was Secretary; International Academy of Pathology; Aerospace Medical Association; American Society of Experimental Pathologists; American Society for Cancer Research; National Board of Medical Examiners; American Association of Immunologists; American Association for the Advancement of Science; Division of Medical Sciences of the National Research Council; Pathological Society of Great Britain and Ireland; Royal Society of Medicine of Great Britain; Association Francaise pour l'Etude de Cancer; International Society of Normal and Pathological Anatomy; Brazilian College of Anatomists; and the Association of Clinical Pathologists (British).

In many of the organizations he held important offices: President of the American Association of Pathologists and Bacteriologists; President of the American Society of Experimental Pathologists; Chairman of the Section on Pathology and Physiology, American Medical Association; Vice-President of the American Section of the former International Association of Medical Museums; Vice-President of Section N, American Association for the Advancement of Science; President of the American Section of the International Society for Geographic Pathol-

ogy; and President of the National Board of Medical Examiners.

He was selected for many important positions including member of the Council on Physical Therapy, American Medical Association, 1930-1939; Medical Advisory Board, Leonard Wood Memorial for the Eradication of Leprosy, Chairman, 1956-1961; Directorial Committee, International Society for Geographic Pathology; American Board of Pathology, 1936-1944; and Committee on Pathology, Division of Medical Sciences, National Research Council, Chairman 1943-1957. His interest has been a major factor in the development of the present Armed Forces Institute of Pathology, where he has been a member of the Institute's Scientific Advisory Board since its establishment in 1946 and the Chairman in its second year, and in 1949, 1950, 1959 and 1961, as well as its first Honorary Life Member.

An erudite and inspiring speaker, Doctor Karsner's memorial lectures are classics including the Smith-Reed-Russell Lecture, George Washington University, District of Columbia, 1937; Roger Morris Memorial Lecture, University of Cincinnati, 1938; Mutter Lecture, College of Physicians, Philadelphia, 1939; Mayo Foundation Lecture, 1940; Arno B. Luckhart Lecture, University of Chicago, 1941; Gerrish Memorial Lecture, Lewistown, Maine, 1942; Christian Fenger Lecture, Institute of Medicine, Chicago, 1944; Robert Zeit Lecture, Chicago, 1944; Middleton Goldsmith Lecture, New York, 1944; the first James Ewing Memorial Lecture, New York, 1946; MacGregor Memorial Lecture, London, Ontario, 1946; Centennial Address, Section on Pathology and Physiology, American Medical Association, 1947; and the first Carl V. Weller Memorial Lecture, Michigan Society of Pathologists, 1957.

Doctor Karsner has been the recipient of many special honors including the William Wood Gerhard Medal of the Philadelphia Pathological Society, 1941; Citation from the Office of Scientific Research and Development for services in World War II; and the Centennial Award of Northwestern University for a distinguished career as a scientist in the states comprising the old Northwest Territory.

One of Doctor Karsner's most noteworthy honors was his selection in 1952 to receive the Gold Headed Cane of the American Association of Pathologists and Bacteriologists for outstanding achievement in the field of pathology. He also received the Captain Robert Dexter Conrad Award in 1961.

In addition to his military service in World War I, Doctor Karsner was special consultant from 1943 to

1945 to the Secretary of the Army Air Corps, and in 1949 he again served the Army as a consultant for its hospitals in Europe.

Doctor Karsner had spent his last years in active retirement in Washington, D.C., during which time his professional interests in pathology remained foremost and vital.—Armed Forces Institute of Pathology, Washington, D.C. 20305, and PAO, BuMed. 

## AWARDS AND HONORS

### Navy Cross

Burns, Dewey R., Jr., HM3 USN  
Lewis, David H., LCDR MC USN  
Rudd, Donald L., HM2 USN  
Wilhelm, Mack H., HM3 USN

### Silver Star Medal

Kuklenski, Michael J., Jr., HM3 USN  
Willeford, Alton W., HM3 USN  
Wood, Thomas J., HM2 USN

### Legion of Merit

Bulshefski, Veronica M., CAPT NC USN  
DeWaall, Jan G., CDR MC USN  
Stalter, Robert A., CAPT MC USN  
Taylor, George J., III, CAPT MC USN

### Bronze Star Medal

Bartolovitch, John M., HM2 USN  
Billings, Francis L., HMC USN  
Fleckner, Theodore H., HM1 USN  
Foulkes, Rhys O., HM2 USNR  
Hall, John F., HM2 USN  
Havlovick, Joseph J., Jr., HM3 USN  
Jones, Milton M., HM2 USN  
Lussier, William A., HM2 USN  
Main, Charles A., HM3 USN  
Miller, Ronald D., LCDR NC USNR  
Reeder, Stuart A. M., HM2 USN  
Sickles, James A., HM3 USN  
Sledge, David B., HM2 USN  
VanDamme, John L., HM2 USN  
Villanueva, Alberto, Jr., HM2 USN

### Meritorious Service Medal

Vitillo, Angelica, CAPT NC USN

### Navy Commendation Medal

Burden, Bruce L., HM2 USN  
Casper, Allan V., LTJG MSC USNR

Charland, Normand L., LT MSC USN

Courtney, John C., CDR MSC USN

Foss, Geoffrey W., HN USN

Gant, Allan L., HM2 USN

Hagen, Arthur D., CDR MC USN

Hagerman, Wade H., Jr., CAPT DC USN

Hayes, Daniel E., CDR DC USN

Helms, Van C., HM3 USN

Hughes, Robert G., CDR MSC USN

Keener, Mary F., CAPT MSC USN

McClendon, Frank O., Jr., CDR MSC USN

McGhee, Frank R., HM3 USN

McGrath, Kevin J., HMC USN

McLynn, Larry W., HM3 USN

Melhan, Mary K., LCDR NC USN

Michener, Harold H., HM3 USN

Overturf, David C., Jr., HM2 USN

Parker, Helen C., LCDR NC USN

Patzke, Douglas E., HM3 USN

Sams, Gordon L., HM3 USN

Scherer, Carolyn E., LCDR NC USN

Schroll, John E., LT MSC USN

Smith, Donald L., HM2 USN

Soulis, Harold A., HM1 USNR

Staudenrour, Dolores M., LCDR NC USN

Stout, Richard C., HM3 USN

Zakrzewski, Cary J., HM2 USN

### Navy Achievement Medal

Allison, Michael C., HM2 USN

Amadio, Ricco T., HMC USN

Averette, Ronald E., HMC USN

Burkhart, Fred A., HMC USN

Caputo, David L., HM3 USN

Carlson, Larry G., HM2 USN

Chraska, Gordon W., HM1 USN

Cleberg, Joseph M., HM2 USN

Corby, Mary C., LT NC USNR

Cox, Ernie A., Jr., HM3 USN

Curtiss, David F., HM3 USN

Davis, Jeffrey G., HM2 USN

Diamond, James L., HMC USN

Duda, Charles J., Jr., HM2 USN

Dybeck, Walter J., Jr., HM2 USN

Guyette, Ronald E., HMC USN

Hanes, Larry T., HM3 USN

Hays, Kirk D., HM2 USN

Hitchings, James E., HMC USN

Holden, David A., HMC USN

Homeier, William E., HM2 USN

Jones, Robert D., HM1 USN

Keeney, John D., Jr., HMC USN

Lopresti, John R., HM2 USN

*Navy Achievement Medal (Con.)*

Meek, Ernest F., HM1 USN  
Milius, Richard D., HN USN  
Oliphant, Herbert (n), HM1 USN  
Osbo, John D., HM2 USN  
Pittenger, Ronald L., HM1 USN  
Randolph, Charles L., HMC USN  
Rountree, Terry L., HM3 USN  
Ruch, Philip N., HM2 USN  
Scott-Smith, Ann, LT NC USN  
Sonza, Ernesto P., HM1 USN  
Swartz, Jay L., HM2 USN  
Taber, James K., HMC USN  
Taylor, James E., HM3 USN  
Terwileger, Stephen E., HMC USN  
Thomy, Douglas E., HM2 USN

Uzzell, Danny G., HM2 USN  
Wallner, Taylor V., HMC USN  
Weightman, Donald C., HM2 USN  
Woy, Richard A., HM2 USN

*Navy Unit Commendation*

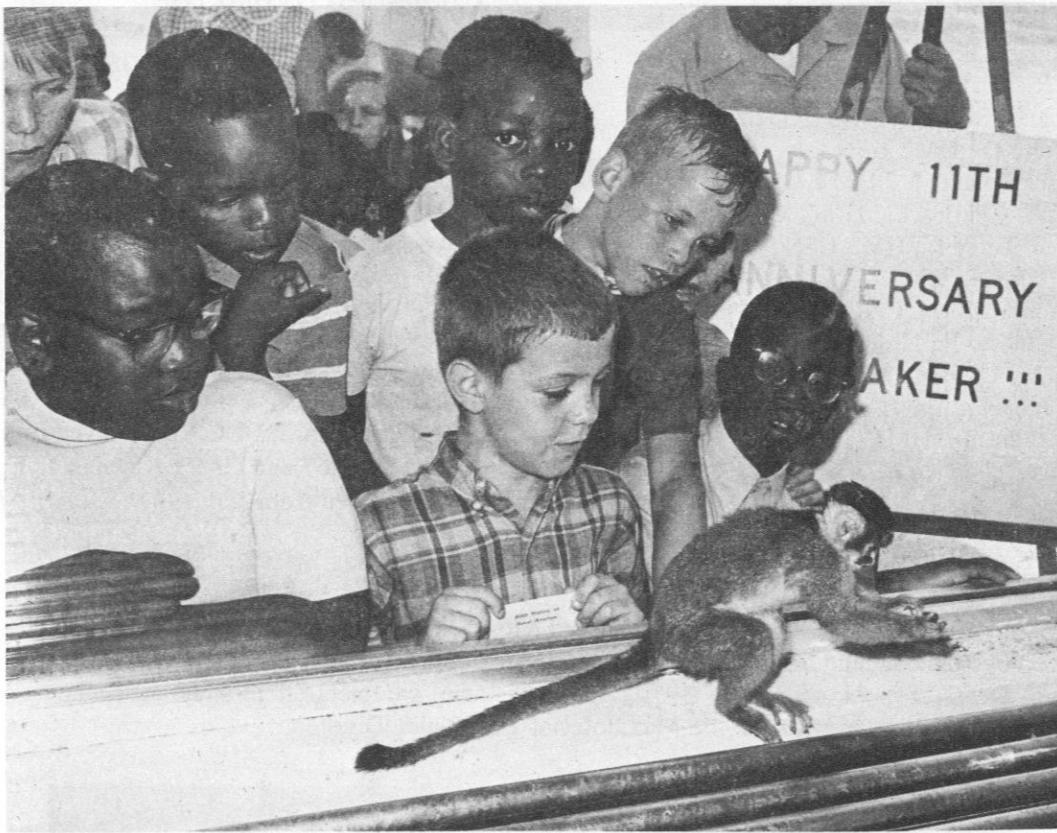
The United States Naval Dental Clinic,  
Yokosuka, Japan

During the period for which the Navy Unit Commendation was awarded, two officers of the Naval Dental Corps served as Commanding Officer, U.S. Naval Dental Clinic, Yokosuka, Japan. CAPT William C. Wohlfarth, Jr., DC, USN served from August 1965 to July 1967 and CAPT Kenneth L. Longeway, DC, USN served from July 1967 to June 1970. ☺

As part of an annual NAVAL DENTAL RESERVE SEMINAR at the Bureau of Medicine and Surgery, 30 officers from various naval districts visited the Naval Dental School, in March 1970. Some of them are pictured looking at ocular prostheses fabricated in the Maxillofacial Prosthetics Division.



The seminar was held to provide orientation in the administration and operation of the Naval Dental Corps and to discuss current concepts affecting the Reserve Program.—NDS Press Release, Photo by R. M. Oswald, NNMC, Bethesda, Md. ☺



Pensacola's Hallmark School children visit Miss Baker, FAMOUS SPACE MONKEY at the Naval Aerospace Medical Institute, Pensacola, Fla., to wish her a happy 11th anniversary of the historic spaceflight she made May 28, 1959. She blazed the trail for human astronauts and is the first primate to survive a trip into space. At 19 ounces, Miss Baker has retained the weight of her youth which many doctors recommend for everyone. Her mate, Big George weighs two pounds. ☺

**DJAKARTA DETACHMENT ESTABLISHED**—On 16 January, 1970, a detachment in Djakarta, Indonesia, of the U.S. Naval Medical Research Unit No. 2, Taiwan, was formally established. An agreement was officially signed by Professor G. A. Siwabessy, Minister of Health, Republic of Indonesia, and by Ambassador F. J. Galbraith of the U.S. The mission of the detachment is to conduct research in the biomedical sciences, study infectious diseases and medical problems of importance to the governments of the U.S. and Indonesia, recommend control measures and provide training in research techniques. ☺

**DIETARY STANDARDS**—CDR E. J. Irvin, MSC, Head, Food Service Branch, BuMed, met with representatives of the National Academy of Sciences, the National Research Council and the FDA, 31 March, to discuss recommendations of the White House Conference on Nutrition. The whole matter of recommended dietary allowances, regulatory areas and development of food marketing standards for consumer safety were inquired into. Publication of a revised edition of "Recommended Dietary Allowances" is expected to be delayed pending further study. ☺

**United States Navy Medical Newsletter**

**CORRESPONDENCE AND CONTRIBUTIONS** from the field are welcomed and will be published as space permits, subject to editing and possible abridgment. All material should be submitted to the Editor, Navy Medical Newsletter, Code 38, Bureau of Medicine and Surgery, Washington, D.C. 20390.

**NOTICES** should be received not later than the third day of the month preceding the month of publication.

**PROFESSIONAL PAPERS AND ARTICLES** should be typewritten on one side of the paper, double spaced, with liberal margins. Original and one carbon copy are required. Generic names of drugs are preferred. If the author's present affiliation differs from that under which the reported work was done, both should be given. Unless otherwise indicated, it will be assumed that the article presented has not been previously printed or delivered elsewhere. Papers which have been delivered or printed elsewhere, covered by copyright, cannot be reprinted in the Newsletter without the written permission of the author(s) and copyright holder. It is the responsibility of the author(s) to inform the Newsletter when the material submitted has been previously used or copyrighted. The Newsletter will be happy to request permission to reprint from the copyright holder when this is necessary.

**ILLUSTRATIONS** are acceptable when they substantially contribute to the understanding of the basic material. Only distinct, glossy, black and white **PHOTOGRAPHS** which are functional can be printed. Prints should not be mounted, stapled, clipped or otherwise deformed and can be marked lightly on the back with the figure number. Legends should be typed consecutively on a separate paper with the indicated figures; credits for the photography may also be included. Identities of patients should be masked. **DRAWINGS, TABLES AND GRAPHS** should be minimal in number and properly labeled. They should be neatly done in heavy black ink on white paper, one to a page.

**SUGGESTIONS** are invited concerning the Newsletter, its content and form. Comments should be forwarded to the Editor.

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THE NAVY MEDICAL NEWSLETTER received a CHIEF OF INFORMATION MERIT AWARD for the January–March quarter of 1970, for exemplary achievement, within the magazine category. VADM Davis, MC, USN, Surgeon General (left) and RADM Norris, MC, USN, Assistant Chief for Personnel and Professional Operations (right) are shown with the Editor (left) and Assistant Editor (right) following presentation of the award by the Surgeon General.

**U.S. NAVY MEDICAL NEWSLETTER**

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